Commodore® MAGAZINE

MERGED! See p. 6

# RUN

November 1989
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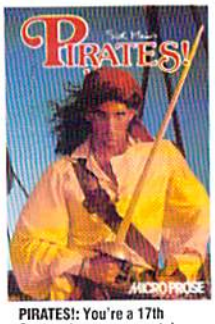


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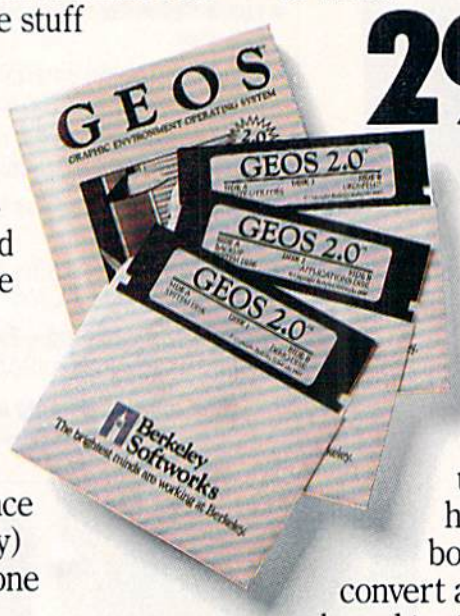


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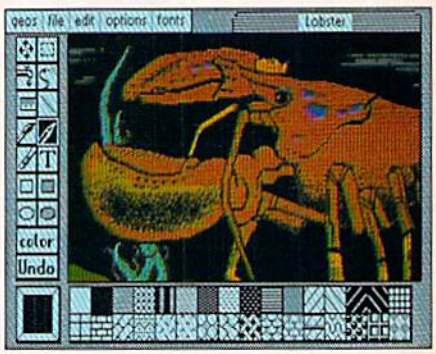


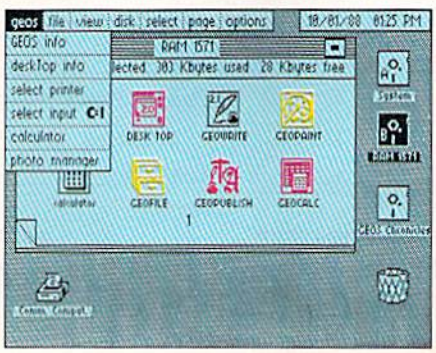


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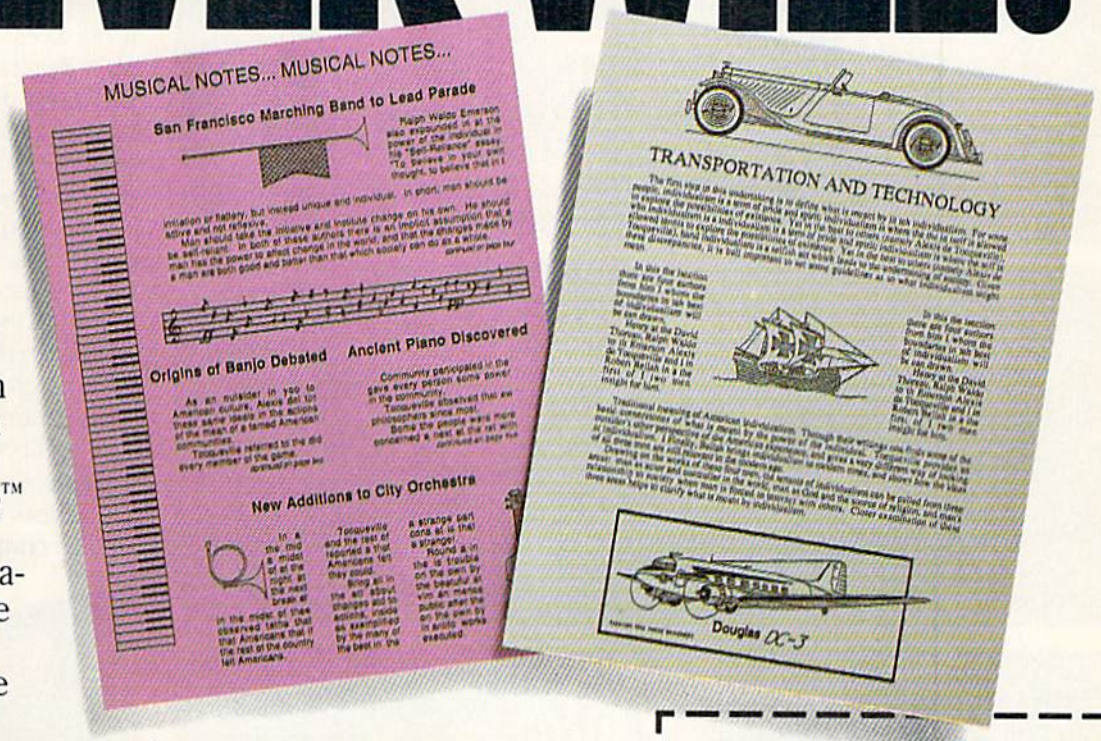
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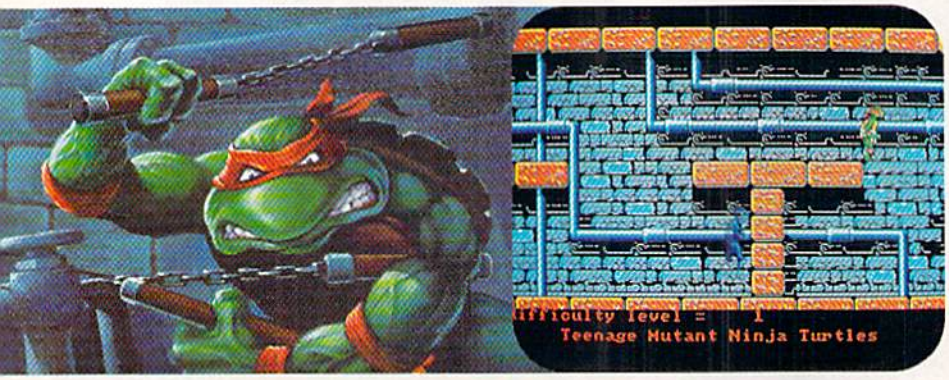

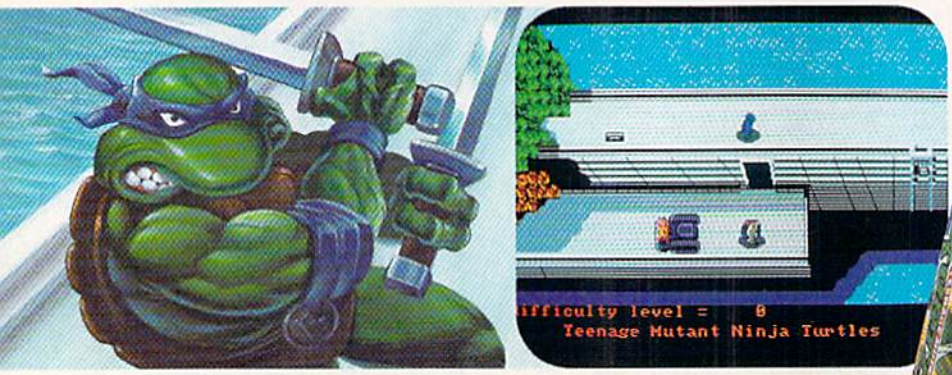

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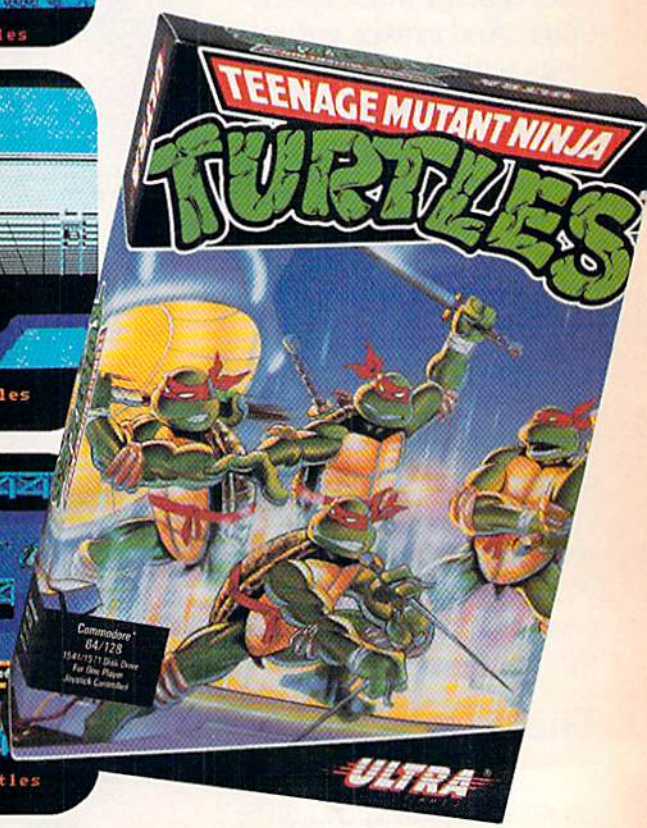


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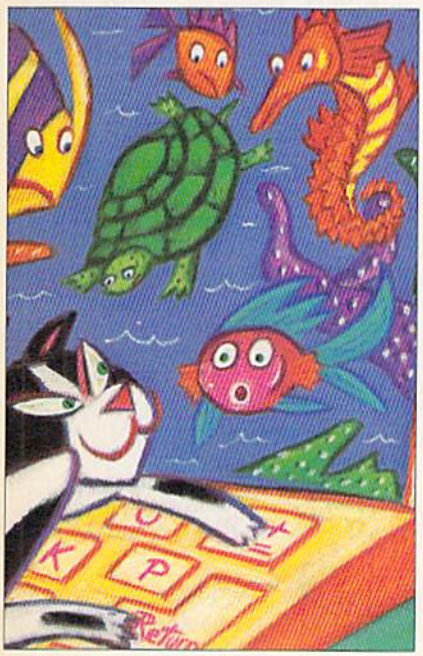

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COVER PHOTOGRAPHED BY LARRY DUNN

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* Most Commodore users have no time to type in listings during the holiday season. So give yourself the break you deserve by ordering the November–December 1989 ReRUN disk. See the order card at page 44.

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# RUNning Ruminations

Dear *Commodore Magazine* Reader,

I am pleased to take this opportunity this month to welcome you to the pages of *RUN*.

*RUN* has recently acquired *Commodore Magazine*, which ceased publication with its October issue. This represents a win-win situation, as they say. Commodore can devote its energies to what it does best—manufacture computers. *RUN*, in fulfilling the subscription obligations of *Commodore Magazine*, gains a significant number of new readers and active computer users.

*A tradition ceases; a tradition continues.*

Without relinquishing its own identity, *RUN* will continue to keep alive the spirit of *Commodore Magazine*, which can trace its origins back to the early days of Commodore computing. Beginning with next month's issue, *RUN* will incorporate two of *Commodore Magazine*'s most popular columns—Gold Mine, an exciting compilation of gaming hints and tips, and 128 Mode, which is one of the few regular columns in the industry devoted specifically to 128 owners.

The astute reader will notice *RUN*'s slightly different approach to the Commodore market. *RUN* is a no-nonsense, informational publication that emphasizes how users can get the most out of their computers. *RUN* has, over the years, gained renown as an active and involved supporter of the user community. We will continue meeting the needs of the marketplace through our participation at computer shows and on-line, the publication of blockbuster articles and programs and the production of special disk projects, the most recent of which are a games software disk for C-128 users and a disk of applications and utilities for GEOS owners.

You will also note that *RUN*'s editorial coverage is not diluted with Amiga material; it remains a magazine dedicated to eight-bit owners.

*RUN*'s acquisition of *Commodore Magazine* bolsters our efforts to cover this market and significantly enhances *RUN*'s leadership position.

Whether you're a long-time Commodore owner or a newcomer to computing, you'll find much valuable information in this and the coming months in the pages of *RUN*.

We are delighted to offer you, and thousands of new readers, the opportunity to judge for yourself. You can join the tens of thousands of regular readers who have made *RUN* an essential ingredient of their computing experience. Welcome!

Regards,

Dennis Brisson

**Dennis Brisson**
**Editor-in-Chief**

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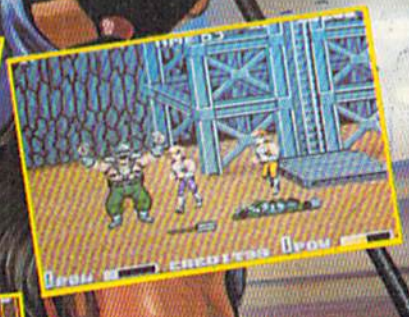

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# MAGIC

*Performing screen magic and giving you quick access to ASCII equivalents are some of the things this month's tricks provide.*

Compiled by TIM WALSH

## $55B C-64 Screen Animation

Liven up any C-64 screen display with Animation Lines 64. Unlike other line-scrolling utilities, Animation Lines is interrupt-driven and unaffected by most other computer operations. To activate it after running, just enter SYS 4096. To deactivate it, use SYS 4160. For more dramatic effects, enter POKE 56325,100.

```
Ø REM ANIMATION LINES 64 - JUSTIN REYNOLDS
                                        :REM*217
1Ø FORA=4Ø96TO4173:READX:POKEA,X:CK=CK+X:N
   EXTA                                 :REM*42
2Ø IFCK<>81Ø3THENPRINT"DATA ERROR...":END
                                        :REM*27
3Ø PRINT"{SHFT CLR}ENABLE - SYS4Ø96 / DISA
   BLE - SYS416Ø"                       :REM*197
4Ø DATA 76,14,16,162,Ø,169,234,157,Ø,74,23
   2,2Ø8,248,96,16Ø,64,14Ø,9,16,32      :REM*28
5Ø DATA 3,16,2ØØ,192,75,2Ø8,245,169,96,141
   ,Ø,75,12Ø,169,16,141,21,3,169        :REM*14Ø
6Ø DATA 45,141,2Ø,3,88,96,162,Ø,142,32,2Ø8
   ,142,33,2Ø8,32,Ø,64,232,224,2        :REM*233
7Ø DATA 2Ø8,242,76,49,234,12Ø,169,234,141,
   21,3,169,49,141,2Ø,3,88,96,Ø         :REM*87
```

—JUSTIN R. REYNOLDS, HOWELL, NJ

## $55C 128 Pop-On Screens

Magic Trick $52A, C-64 Pop-On Screens (May 1989), demonstrates how to make C-64 screens that immediately pop into view. Pop-on screens are remarkably easy in the C-128's 40-Column mode, since switching to Fast mode instantaneously blanks the screen, and Slow mode instantly re-displays the screen.

Making pop-on screens in the C-128's 80-Column mode requires a little more programming knowledge, though. Fortunately, the 80-column VDC has a screen-blanking routine that's activated by entering SYS 52684,0,35. The screen display will instantly re-appear by entering SYS 52684,100,35. I wrote C-128 80-Column Pop-On Screens to demonstrate these commands at work in a simple but effective program.

```
Ø REM 128 8Ø-COLUMN POP-ON SCREEN - AARON
  PEROMSIK                              :REM*35
1Ø GOTO4Ø                               :REM*138
2Ø SYS 52684,Ø,35:RETURN:REM SCREEN OFF
                                        :REM*152
3Ø SYS 52684,1ØØ,35:RETURN:REM SCREEN ON
                                        :REM*193
4Ø REM START PROGRAM HERE               :REM*74
5Ø FAST:GRAPHIC 5,1:COLOR 5,7           :REM*152
6Ø FOR X= Ø TO 1:IF X=Ø THEN GOSUB 2Ø
                                        :REM*31
7Ø FOR Y= 1 TO 117: PRINT "A POP-ON SCREEN
   ! ";:NEXT                           :REM*71
8Ø IF X=Ø THEN WINDOW 32,9,48,11,1:COLOR 5
   ,4:PRINT"{CRSR DN}{2 SPACEs}{CTRL 9}PRE
   SS ANY KEY":GOSUB 3Ø:GETKEYA$:PRINT"{2
   HOMEs}":SCNCLR:COLOR 5,7             :REM*118
9Ø NEXT                                 :REM*22Ø
```

—AARON PEROMSIK, WORCESTER, MA

## $55D Magic Backdrop 64

Magic Backdrop, a C-64 screen animator, makes the entire screen, or any part of it, scroll in four directions. The character used for the effect is reverse @ (POKE 128). Here are the numbers needed to use the program:

POKE 2,0 to move left
POKE 2,1 to move right
POKE 2,2 to move up
POKE 2,3 to move down
POKE 2,4 to stop scroll

Speed is controlled by memory address 820, with 0 the fastest speed.

SYS 52224 sets up a new character set.
SYS 52227 starts the smooth scroll determined by address 2 (direction) and 820 (speed).
SYS 52230 disables the utility.

Run the demo below for examples of the above.

```
Ø REM MAGIC BACKDROP 64 - PETER M.L. LOTTR
  UP                                    :REM*114
1Ø FORT=52224 TO 5251Ø:READD:POKET,D:CK=CK
   +D:NEXT                              :REM*15Ø
2Ø IF CK <> 34777 THEN PRINT"ERROR IN DATA
   ...":END                             :REM*93
3Ø DATA 76,9,2Ø4,76,1Ø8,2Ø4,76,255,2Ø4,169
   ,8,32,21Ø,255,169,2ØØ,141,136,2      :REM*53
4Ø DATA 169,147,32,21Ø,255,16Ø,Ø,173,24,2Ø
   8,2Ø1,23,2Ø8,2,16Ø,1,185,27,2Ø5:REM*157
5Ø DATA 72,169,Ø,141,Ø,221,169,32,141,24,2
   Ø8,12Ø,165,1,41,25Ø,133,1,1Ø4        :REM*238
6Ø DATA 133,252,169,Ø,168,133,253,133,251,
   169,192,133,254,162,8,177,251        :REM*25Ø
7Ø DATA 145,253,2ØØ,2Ø8,249,23Ø,252,23Ø,25
   4,2Ø2,2Ø8,242,165,1,9,7,133,1        :REM*37
8Ø DATA 88,16Ø,Ø,185,29,2Ø5,153,Ø,196,2ØØ,
   192,8,144,245,96,96,12Ø,169,121:REM*139
9Ø DATA 141,2Ø,3,169,2Ø4,141,21,3,88,96,23 ►
```

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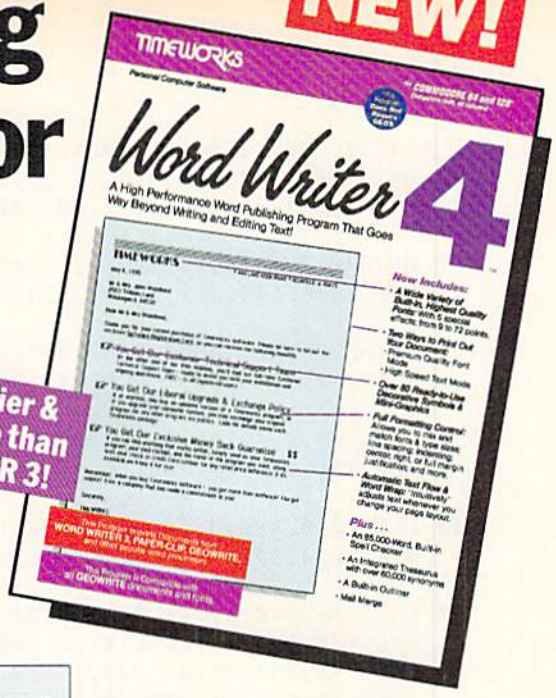
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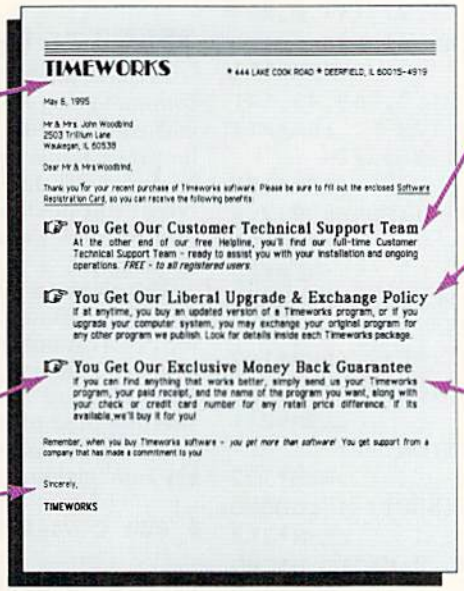
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```
   8,53,3,173,53,3,2Ø5,52,3,176,3 :REM*255
1ØØ DATA 76,49,234,169,Ø,141,53,3,173,17,2
    Ø8,16,251,16Ø,Ø,165,2,2Ø8,2Ø,185
                                   :REM*21
11Ø DATA Ø,196,24,1Ø,144,2,9,1,153,Ø,196,2
    ØØ,192,8,144,239,76,49,234,2Ø1,1
                                   :REM*158
12Ø DATA 2Ø8,2Ø,185,Ø,196,24,74,144,2,9,12
    8,153,Ø,196,2ØØ,192,8,144,239,76
                                   :REM*27
13Ø DATA 49,234,2Ø1,2,2Ø8,25,185,Ø,196,72,
    2ØØ,185,Ø,196,136,153,Ø,196,2ØØ
                                   :REM*162
14Ø DATA 2ØØ,192,8,144,243,1Ø4,141,7,196,7
    6,49,234,2Ø1,4,24Ø,24,173,7,196
                                   :REM*111
15Ø DATA 72,16Ø,6,185,Ø,196,2ØØ,153,Ø,196,
    136,136,16,245,1Ø4,141,Ø,196,76:REM*74
16Ø DATA 49,234,76,49,234,169,27,141,Ø,221
    ,169,21,141,24,2Ø8,169,4,141,136
                                   :REM*114
17Ø DATA 2,12Ø,169,234,141,21,3,169,49,141
    ,2Ø,3,88,96,2Ø8,216,255,129    :REM*14
18Ø POKE5328Ø,Ø:POKE53281,6:SYS52224
                                   :REM*1Ø7
19Ø PRINT"{SHFT CLR}{CTRL 1}";:POKE82Ø,2:P
    OKE2,4                         :REM*19
2ØØ GOSUB46Ø                       :REM*28
21Ø PRINT"{HOME}{CTRL Ø}";:POKE2,2 :REM*56
22Ø DIM V$(24):V$(Ø)="{HOME}":FORI=1TO24:V
    $(I)=V$(I-1)+"{CRSR DN}":NEXT :REM*192
23Ø D$="":FORI=1TO16:D$=D$+"{CRSR RT}":NEX
    T                              :REM*241
24Ø E$=LEFT$(D$,15):F$=LEFT$(D$,1Ø)
                                   :REM*192
25Ø B$="{SHFT -}{17 SPACEs}{SHFT -}":GOSUB
    43Ø                            :REM*219
26Ø PRINTV$(12)TAB(13)"{CTRL 9}MAGIC BACKD
    ROP"                           :REM*252
27Ø SYS52227:GOSUB49Ø              :REM*197
28Ø GOSUB43Ø:PRINTV$(12)TAB(18)"{CTRL 9}UP
    !":GOSUB49Ø:GOSUB43Ø:POKE2,3   :REM*234
29Ø PRINTV$(12)TAB(17)"{CTRL 9}DOWN!":GOSU
    B49Ø:GOSUB43Ø:POKE2,Ø          :REM*82
3ØØ PRINTV$(12)TAB(17)"{CTRL 9}LEFT!":GOSU
    B49Ø:GOSUB43Ø:POKE2,1          :REM*19Ø
31Ø PRINTV$(12)TAB(17)"{CTRL 9}RIGHT!":GOS
    UB49Ø:POKE2,Ø                  :REM*12
32Ø POKE2,2:B=2                    :REM*175
33Ø FORI=1TO5:READA:POKE82Ø,A:B=B+1:IFB>3T
    HENB=Ø                         :REM*21Ø
34Ø DATA15,7,3,2,Ø                 :REM*255
35Ø POKE2,B:GOSUB49Ø:NEXT           :REM*6
36Ø POKE2,4:FORI=4952ØTOI+7:POKEI+656,PEEK
    (I):NEXT:POKE2,2               :REM*148
37Ø PRINTV$(11)E$"{CTRL 9}(R)ESTART"
                                   :REM*171
38Ø PRINTV$(12)E$"{CTRL 9}{9 SPACEs}"
                                   :REM*124
39Ø PRINTV$(13)E$"{CTRL 9}(E)ND{2 SPACEs}"
                                   :REM*217
4ØØ GETA$:IFA$="R"THENRUN          :REM*161
41Ø IFA$<>"E"THEN4ØØ               :REM*83
42Ø SYS5223Ø:PRINT"{SHFT CLR}":END :REM*59
43Ø PRINTV$(9)F$"{COMD 8}{CTRL 9}{COMD A}{
    17 SHFT *s}{COMD S}"           :REM*153
44Ø FORI=1ØTO14:PRINTV$(I)F$"{CTRL 9}"B$:N
    EXT                            :REM*15
45Ø PRINTV$(15)F$"{CTRL 9}{COMD Z}{17 SHFT
     *s}{COMD X}":RETURN           :REM*245
46Ø A$="{CTRL 9}":FORI=1TO4Ø:A$=A$+"@":NEX
    T                              :REM*15Ø
47Ø FORI=1TO24:PRINTA$;:NEXT:PRINTLEFT$(A$
    ,4Ø);:POKE52199,128:POKE56295,Ø
                                   :REM*221
48Ø RETURN                         :REM*1Ø8
49Ø FORDY=1TO15ØØ:NEXT:RETURN      :REM*75
```

—PETER LOTTRUP, BUENOS AIRES, ARGENTINA

## $55E THE KEY TO ASCII

Even the most efficient, long-time C-64 programmers can't commit to memory all of the ASCII equivalents of characters and control codes. The Key to ASCII eliminates the need for programmers to check C-64 reference charts and manuals by displaying the decimal ASCII code of the character most recently printed to the screen. Consequently, programming printers and writing advanced Basic programs are made much easier.

The program responds instantaneously whenever a key is pressed or a Basic program is run or listed. A colon preceding the ASCII number in the upper-right corner of the screen acts as a delimiter, allowing you to use commands such as Run, List and Save on the top-most screen line without affecting their functions. The Key to ASCII is enabled with a SYS 53000 and disabled by pressing the run-stop/restore key combination.

```
Ø REM C-64 KEY TO ASCII - EDGAR LOSBERG
                                   :REM*163
1Ø FOR M=53ØØØ TO 53Ø83:READ A:CS=CS+A:POK
   E M,A:NEXT                      :REM*96
2Ø IF CS <> 9Ø34 THEN PRINT"ERROR IN DATA.
   .":END                          :REM*2Ø1
3Ø SYS 53ØØØ                       :REM*139
4Ø DATA 12Ø,169,21,141,2Ø,3,169,2Ø7,141,21
   ,3,88,96,169,48,141,37,4,141    :REM*247
5Ø DATA 38,4,141,39,4,169,58,141,36,4,165,
   215,133,251,56,233,2ØØ,144,9    :REM*71
6Ø DATA 133,251,169,5Ø,141,37,4,16,14,165,
   251,56,233,1ØØ,144,7,133,251    :REM*15Ø
7Ø DATA 169,49,141,37,4,162,48,165,251,56,
   233,1Ø,232,176,251,2Ø2,142,38   :REM*145
8Ø DATA 4,24,1Ø5,58,141,39,4,76,49,234
                                   :REM*28
```

—EDGAR LOSBERG, HUNTSVILLE, AL

## $55F TRULY USEFUL C-128 TRICKS

Four valuable C-128 "tricks" that I use almost daily are largely unknown to a number of C-128 users, so I'll use this opportunity to pass them along to my following of Magic fans.

First, the C-128 Basic 7.0's Copy command can easily be enhanced to make multiple copies of a program, sequential or any other file by placing it into a For-Next loop. The syntax for making, say, three copies is as follows:

```
FOR X=1 TO 3: COPY "FILE" TO "FILE" + STR$(X): NEXT
```

Second, the F1 function key can be defined into a single keypress file deletion key by using the following Key definition:

```
KEY 1, SC{Shifted R}+"{3 tabs}"+":"+CHR$(13)+"Y"
```

Just list the directory, place the cursor at the left-most column on the same line as the file to be deleted and press F1. Naturally, any function key can be used in place of F1.

My third C-128 trick is a habit I've adopted after heeding the advice of a number of seasoned C-128 veterans. Whenever I use Basic 7.0 disk commands, I always include the ONU{device#} command to minimize the potential of confusing the two or more disk drives connected to my computer. The significance of doing so is readily apparent to programmers who are aware of disk-sensitive 1541/1571/1581-compatible routines.

For example, DLOAD"filename" becomes DLOAD "filename" ONU8 (ONU9 if loading from device 9); BOOT becomes BOOTONU8; COLLECT becomes COLLECTONU8; and so on. Besides making disk commands easier for both the user and computer to decipher, it further makes programming easier by eliminating the need for the inherently weak use of a comma when loading from a secondary disk drive using a directory displayed on the screen; e.g., BOOT"RUN SHELL",U9: can be entered as BOOT "RUN SHELL"ONU9:.

The final trick that I constantly use is the RGR(0) command within C-128 programs to detect whether the computer is running in 40- or 80-Column mode. A value of 5 indicates 80-Column mode, while a value of 0 is returned by 40-Column mode. A sample mode detection line I incorporate into 40-column programs usually appears as:

```
10 IF RGR(0)=5 THEN PRINT "PLEASE SWITCH MONITOR
   TO 40-COLUMN MODE"
20 PRINT "PRESS A KEY TO CONTINUE. . .":GETKEYA$
```

If you need 80-Column mode exclusively, just change RGR(0)=5 in the above statement to RGR(0)< >5.

—TIM WALSH, MAGIC COLUMNIST

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—JOHN MCDONALD, PALM BAY, FL ■

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# News and New Products

*Something for your wallet, your ears—even for your eyes. Plus, news of Commodore's renewed commitment to the C-64.*

Compiled by HAROLD R. BJORNSEN

## Hurry! Order Yours *Now*!

WARWICK, RI—If ***User Friendly—The Computer User's Guide to Incredible Savings!*** sounds just like the television ads for the Miracle Painter and Armourcote Cookware, that's because it's pubished by the same company, V&B Communications (5 Division St., PO Box 518, East Greenwich, RI 02818).

This monthly newsletter aims to cut your computer expenses like a Ginsu Knife cuts through aluminum cans. It tells you such things as how to get free software, where to buy supplies at a fraction of their cost, how to double the memory capacity of 3½-inch disks, and more. A yearly subscription is $99.99.

Check Reader Service number 400.

## Keep Moving!

GRANADA HILLS, CA—In **Fire Power**, a C-64 tank-combat game, one or two players must guide one of three tanks through a surrealistic world of heavily guarded military bases. The objective is to capture your opponent's flag. You may follow the roads and take the gates or head cross-country and blast through trees, walls and buildings. Enroute, you'll encounter enemy turrets, fuel stations and gulags. Just don't stay in one place too long, or the choppers will get you. Available from Micro-Illusions (17408 Chatsworth St., Granada Hills, CA 91344) for $24.95.

Check Reader Service number 401.

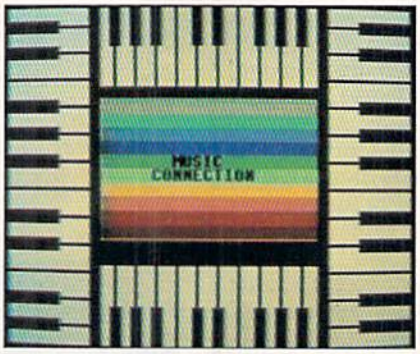
## In Space or in a Patient's Head

HUNT VALLEY, MD—Medalist International (180 Lakefront Drive, Hunt Valley, MD 21030) has released two games for the C-64. Prices are $29.95 for each.

**Xenophobe**, an arcade game, puts you in command of three squads of scientists, soldiers and ne'er-do-wells in a battle to reclaim abandoned space stations from alien invaders, who are everywhere. A joystick is required.

**Weird Dreams** puts you into the subconscious mind of a hospital patient as he undergoes surgery. You'll encounter giant wasps, carnivorous rose bushes, a psychopathic lawn mower and a little girl who is not all sugar and spice. Your success at confronting the challenges in the game directly affects the patient's health on the operating table.

Check Reader Service number 403.

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## Music for Your Ears

VIENNA, VA—Commodore 64/128 owners can now hear music and sound effects while chatting, competing in game shows and participating in music forums on QuantumLink, an online service. The new service, called **Music Connection**, offers over 6500 music selections, ranging from classical and jazz to heavy metal, pop, golden oldies and advertising jingles. Users can also express themselves with sound effects such as whistles, laughs and the wild cheers of the online audience during game shows. For pricing and other information, contact QuantumLink at 8619 Westwood Center Drive, Vienna, VA 22182, or call 1-800-782-2278.

Check Reader Service number 407.

## The Eyes Have It

EAST ROCKAWAY, NY—Kaizen Products (PO Box 28, East Rockaway, NY 11518) has released the **Eyes-Massager**, which, according to the company, alleviates eye strain and headaches associated with long hours in front of computer monitors. Through vibration, the product stimulates the seven acupressure points around the eyes and forehead to increase blood circulation and provide relief. It's available for $24.95 plus $5 s/h.

Check Reader Service number 402.

## Help Solve a Mystery

SAN MATEO, CA—**Fire King**, an action/adventure game for the C-64, begins with the death of the Fire King, ruler of the land and presumed until now to be its most powerful wizard. His demise has plunged the land into disarray and created a mystery that needs to be solved. You must journey through the land while fighting off the creatures of chaos that threaten to overrun it. You must also solve intricate puzzles and plots while you gather the clues for solving the ultimate mystery of the death of the King. Available for $29.95 from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.

Check Reader Service number 405.

## Make Money or Make Sounds

KUTZTOWN, PA—Free Spirit Software (PO Box 128, Kutztown, PA 19530) has released two 80-Column-mode programs for the C-128. Each retails for $29.95.

In **Wheel & Deal**, a game with graphics, sound and music, the object is to amass property and wealth by shrewd dealing and taking risks. A player may win by accumulating over $100,000 or by forcing all other players into bankruptcy. The game may be played with two to four players. Wheel & Deal requires a mouse or joystick, an 80-column color monitor and a 1571 disk drive.

With **Digitalker 128**, the user can add digitized speech to C-128 programs in 80-Column mode. It's a set of machine language routines that can play digitized sound samples from within a program. These sounds—over 500,000 ►

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bytes' worth—are included on the ClipSound Disk supplied with the package. Digitalker supports, but does not require, a 1700 or 1750 RAM expansion unit. The program and ClipSounds are supplied on two 1571-formatted disks. Included are several speech demos and talking 80-column games.

Check Reader Service number 404.

## Commodore Renews Its Commitment to the C-64

WEST CHESTER, PA—President Harold Copperman of Commodore Business Machines has announced that the company has added former Casio executive **Robert Larsen** to its new managemant team as vice president of consumer sales.

Larsen, who was a senior vice president at Casio with responsibility for the divisions of electronic musical instruments and professional dealer products, brings to his new position over 25 years of experience in electronic design, manufacturing, marketing, sales and business management. During his tenure at Casio, Larsen directed the growth of the company's music business from zero dollars to over $200 million.

Copperman said, "Larsen's selection demonstrates Commodore's renewed commitment to the U.S. consumer market. Larsen will actively pursue new sales and merchandising strategies for the. . .C-64" and other Commodore products.

## UpTime Goes Downtime

SHREVEPORT, LA—**Softdisk Publishing** has announced that it would begin fulfilling all subscriptions to *UpTime*'s C-64 disk magazine, which has been plagued by dwindling numbers of subscribers, with issues of *Loadstar*, its own monthly software collection for that computer. Softdisk also expects to offer selected programs from the newly acquired UpTime C-64 collection for sale in the near future.

## Kubism

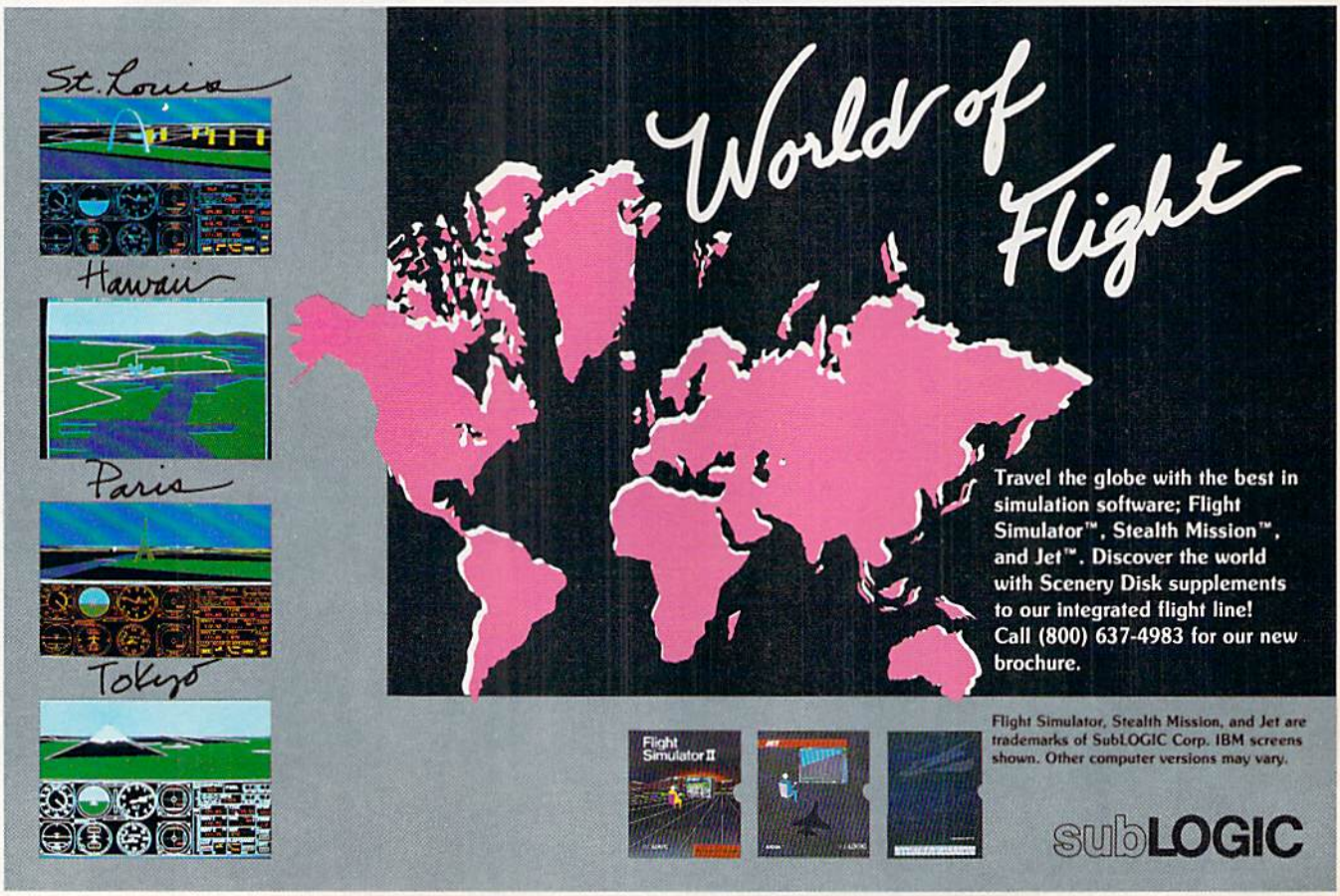
PENFIELD, NY—In **KaleidoKubes**, a domino-like strategy board game for the C-64, you must place your "kube" on the playing board, matching the sides with pieces already on the board. You can play against the computer or another player or even against yourself. Different board shapes are provided on the disk, and you can also design and save your own boards. It's available for $24.95 from Artworx, 1844 Penfield Rd., Penfield, NY 14526.

Check Reader Service number 408.

## For Your Eyes Only

WARSAW, IN—Terminal Optics (2314 DuBois, Warsaw, IN 46580) has released a line of **Eyewear** that reduces computer eye strain and the headaches and blurred vision that often follow a day's work at the computer terminal. Its ultraviolet coating protects the eyes from potential ultraviolet rays. The line utilizes optically ground magnifying powers to reduce eye strain and custom tinting to reduce the problem created by screen blinding. Eyewear is available in three frame colors, in prescription and non-prescription lenses at a price of $49.95 to $89.95.

Check Reader Service number 406. ■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# SANTA CLAUS IS COMING TO TOWN

*Better watch out!*

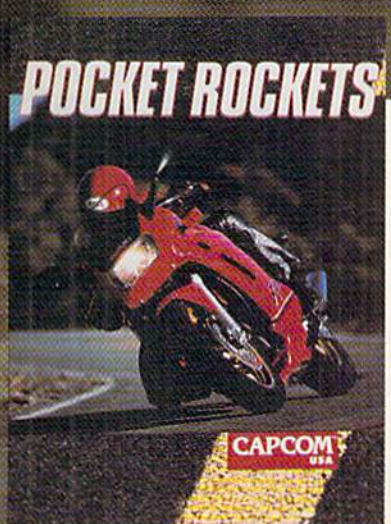
*After a test ride on Pocket Rockets, the high-speed motorcycle simulation game, Santa picked up a new sleigh that will make this year's rounds faster than ever. And whether you've been naughty or nice, you could win this Suzuki 600 Katana during "Santa's Sleigh Giveaway" in January.*

*Meanwhile, experience all the thrills and spills of high-speed racing with machines that take you from zero to 60 in under four seconds. Already gaining critical acclaim, Pocket Rockets lets you choose from four of the quickest, most exotic bikes on the planet. The action's as real as the adrenaline you'll feel.*

*Then, enter "Santa's Sleigh Giveaway" from Capcom U.S.A. Besides the chance to win a new Suzuki motorcycle, you could get a Bell full coverage helmet, or Capcom computer game software. Look to enter in all Capcom computer game packages or visit your favorite computer game retailer for more information. Capcom's belated Christmas giveaway is just around the bend so don't miss out on your chance to win!*

***LEFT: Try your skill against the clock with a couple of laps around the test track. RIGHT: Drag racing demands a quick wrist and fast shifting. Just don't blow the engine!***

Circle 19 on Reader Service card




**SWEEPSTAKES RULES How to Enter:**

1. NO PURCHASE NECESSARY. Fill out and mail official entry found in package or you can enter by hand printing your name, address and zip code on a 3" x 5" piece of paper and mailing it to CAPCOM Santa's Sleigh Giveaway, 3303 Scott Blvd., Santa Clara, CA 95054. Enter as often as you wish. Each entry must be mailed separately by JANUARY 15, 1990. No mechanical reproductions of entry will be accepted and all mail-in entries must be received at the above address by JANUARY 31, 1990. No responsibility is assumed for lost, late, misdirected, or damaged entries.

2. Prize winners will be determined by means of a random drawing to be conducted by an independent judging organization whose decision shall be final. All prizes listed will be awarded, but there can be only one prize winner per household, group or organization. Odds of winning depend on the number of entries received. Approximate grand prize retail value is as follows: Suzuki Katana $4,495.00. Winners will be notified by mail by FEBRUARY 15, 1990 and may be required to execute affidavits and advertising release. Taxes on prize winnings are solely the responsibility of the winners.

3. Sweepstakes is open to U.S. residents except employees of CAPCOM U.S.A. and their immediate families, its subsidiaries and affiliates, its advertising and promotional agencies, and the judging firm. Prizes won by minors may be awarded to parent or legal guardian. Void where prohibited or restricted by law. All Federal, State and Local regulations apply. For a list of major prize winners send a stamped, self-addressed envelope to CAPCOM Santa's Sleigh Giveaway Winners List, 3303 Scott Blvd., Santa Clara, CA 95054 by MARCH 31, 1990.

**CAPCOM® USA**

# MAIL RUN

*Readers tell about their unusual applications and* RUN *solves the Case of the Jumping Pointer in RUN Paint.*

### COMMODORE TRACKS LIFE-SAVING UNITS

I enjoyed reading about the uses Commodore owners have found for their machines ("Sculptor, Lawyer, Editor-in-Chief," *RUN*, August 1989). As a volunteer at the local hospital, I install and troubleshoot their Lifeline Systems. People who live alone and have an ailment that could require immediate attention can press a button on a tiny transmitter that automatically dials the hospital's emergency room to dispatch help to their home.

When I began work on the systems, I found that some units were out but not in use, two were missing, some needed repair, and a small transmitter was missing from some units. With a C-128 spreadsheet I was able to arrange all units in numerical order, determine the status of each unit and the parts needed, and to locate all units.

—ALVAN O. WHITEHEAD
WINCHESTER, KY

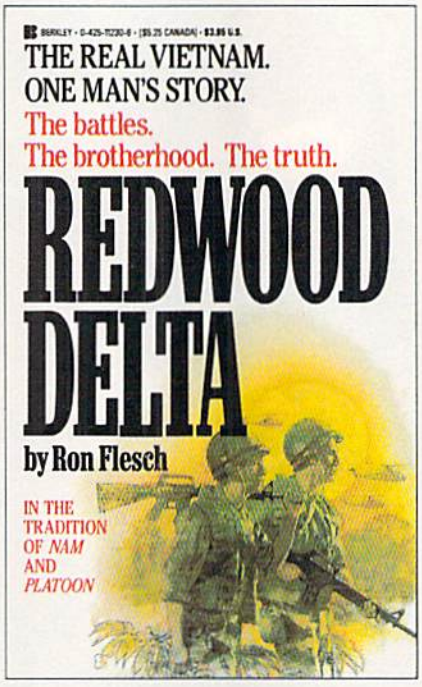
### THAT'S ENTERTAINMENT!

For the past 16 years, I've operated Germinal Stage Denver, a small, live theatre in Denver, Colorado. We bought our first C-64 in 1984 to help keep track of our growing mailing list. Since then, our use of the 64 has widened extensively, both administratively and artistically.

In '86 we upgraded to a C-128, with two disk drives and an Epson FX-80 printer. We now use Superbase 128 for our mailing list (some 6500 names), for the theatre's records, statistics and subscriber lists, for detailed profiles of our Denver acting pool, for box office lists and even to print tickets. We use FontMaster 128 for all correspondence and to typeset our programs and other promotional material. We use SwiftCalc 128 for our spreadsheet needs, including grant writing and budgeting. The theatre's books are kept on disk, using the Totl. Ledger program for the C-64.

Artistically, we use Superbase 128 for plugging schedules for our stage lights, and have even formatted it to handle blocking (stage movement) patterns with rudimentary animation. In addition, our CADPAK-128 program was invaluable in rough-designing our new space and for stage set floorplans.

—ED BAIERLEIN
DENVER, CO




### NOVEL C-64 USE

Enclosed is my book on Vietnam, *Redwood Delta*, which was completely written and edited on my C-64, using WordPro 3 Plus/64 software. Recently I met another author who had also written a Vietnam memoir, and he was amazed that I had used a Commodore computer to do the job. He thought one had to use an IBM or an Apple. That just goes to show how many people have been brainwashed with that type of nonsense!

My wife uses our computer for *her* book as well as for correspondence for her wildlife volunteer work. And our daughters use it when they are writing plays for the school drama club.

If I ever change to an IBM clone, it will only be because I'll have to start sending my Word Perfect manuscripts via modem—I don't believe I'll be able to do this with my C-64.

—RON FLESCH
SAN DIEGO, CA

RUN*'s technical manager, Lou Wallace, says you can send your manuscripts via modem with your C-64.*

—EDITORS

### THE COMMODORE IN INDIA

The Commodore 64 is just beginning its marketing life in India under the name Commander. It is identical to the American version except that it utilizes the color television system used in most European countries. My goal is to make computers accessible to the East Indian musician with low-cost hardware, bilingual operation (Hindi/English) and menu-driven software. I am also presently working on a database of Indian music for educational purposes.

—DAVID COURTNEY
HOUSTON, TX

*David is one of the few Americans to excel in the art of the Tabla, which are small hand drums used in Hindu music. He is the author of* An Introduction to Tabla. *He also accompanies his wife, Chandrakantha, on the Tabla. She is an exponent of the Gwalior tradition of Kheyal singing.*

—EDITORS

### WRITING SEX AND GORE ON A C-64

*Reader Roy Showalter of Baltimore sent the* RUN *editorial staff a copy of* Encore, *the Chevron newsletter for Chevron/Gulf retirees. It describes how one Gulf retiree, Donna Williams, started writing a novel the day after she retired. She now uses her 13-year-old daughter's C-64 and a copy of the PaperClip word processor to write sex-and-gore crime thrillers. Her first book,* Orchestration in Death, *was scheduled to hit* ►

# ANOTHER ONE BITES THE DUST

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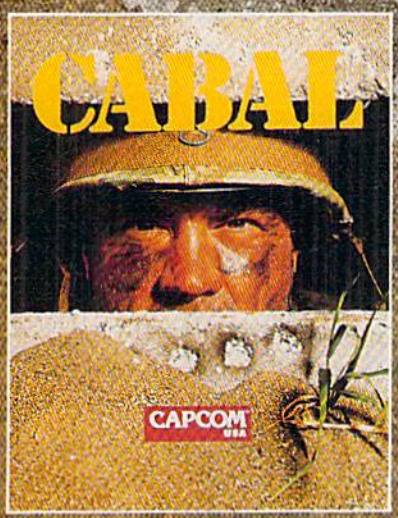

*Cabal Screen Shots.*

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Circle 35 on Reader Service card.

*the Waldenbooks and Crown bookstores last April, and she's already working on her fourth novel. Thanks for the story, Roy, and congratulations, Donna. And thanks to all of you who have contributed their unusual applications to this column.*

*Readers: If you or someone you know uses a C-64 or 128 computer in an unusual way, let us know about it. Include the user's name, occupation, Commodore system and as much detail about the application as possible. We'll feature them in a future Mail RUN.*

—EDITORS

## THE MOUSE THAT JUMPED

For the most part, I must concur with the good reviews of the RUN Paint paint-and-draw program in the July 1989 Mail RUN. However, my 1351 mouse works poorly with this program. The pointer jumps all over the screen of its own accord.

—P. CEPERLEY
ANNANDALE, VA

*A number of readers who have entered the RUN Paint program experienced the same problem, which happens with the Japanese-made version of the 1351 mouse. Readers with this version of the mouse will be happy to learn that Robert Rockefeller, author of RUN Paint, has fixed the problem with the following program.*

*Type in the Mouse Fix listing and save a copy to your RUN Paint disk; then run the program. (Note: You won't be able to use a joystick with the modified RUN Paint program, so keep an unmodified copy on a separate disk.) It will make the necessary changes to RUN Paint and then save the modified copy for you.*

*With this modified version of RUN Paint, you must plug your mouse into* port 1 *and use the* right *mouse button for clicking.*

```
10 REM FIX MOUSE BUG IN RUN PAI
   NT                          :REM*224
20 IF A=0 THEN A=1: LOAD"0:OB.R
   P",8,1                      :REM*51
30 POKE 5337,1: POKE 5908,1: PO
   KE 5911,1: POKE 5920,106: PO
   KE 5921,106                 :REM*96
40 POKE 5922,234               :REM*97
50 FOR A=5819 TO 5836: POKE A,2
   34: NEXT                    :REM*202
60 OPEN15,8,15,"S0:OB.RP": CLOS
   E 15                        :REM*209
70 POKE 45,PEEK(174): POKE 46,P
   EEK(175): POKE 43,0: POKE 44
   ,17: SAVE"0:OB.RP",8 :REM*29
80 PRINT"{SHFT CLR}{2 CRSR DNs}
   WHEN USING RUN PAINT,"
                               :REM*48
90 PRINT"PLUG THE MOUSE INTO PO
   RT 1.": PRINT"{CRSR DN}THE J
   OYSTICK NO LONGER WORKS."
                               :REM*129
100 PRINT"{CRSR DN}USE THE RIGH
    T MOUSE BUTTON TO MAKE": PR
    INT"SELECTIONS."     :REM*38
105 END                         :REM*233
110 POKE 43,1: POKE 44,8: NEW
                                :REM*181
```

—EDITORS ■

## A CALL TO READERS

*This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer hands-on advice and information.*

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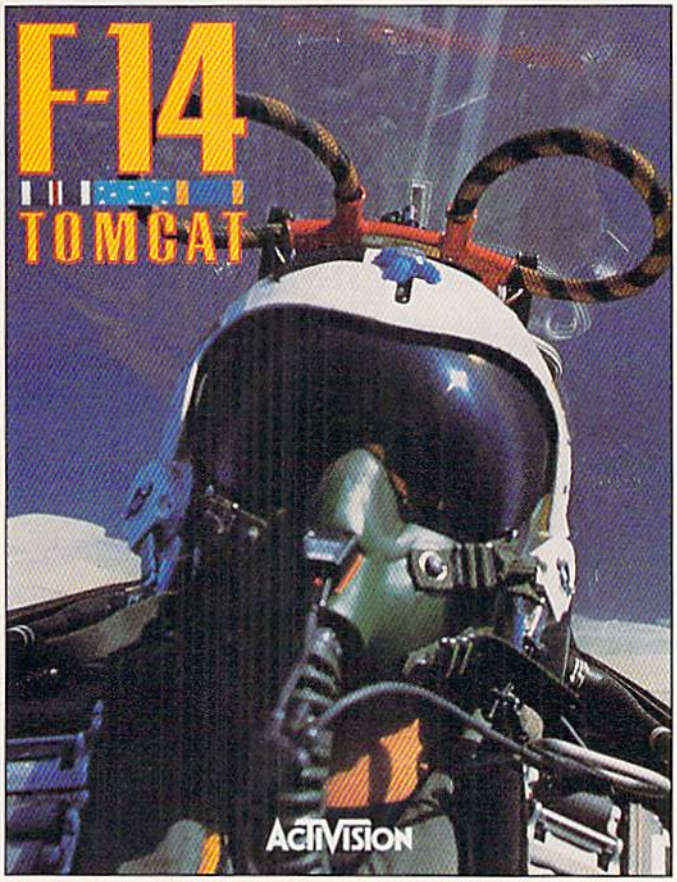
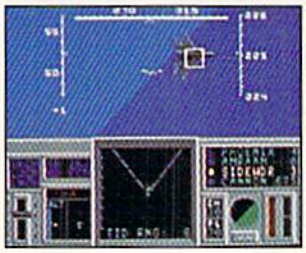
# Will they call you "Tinkerbell" or "Deadeye"?



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MICROPROSE

# PEOPLE

## CONTEST WINNERS "CHEAT DEATH" IN WILD BLUE YONDER WITH "WILD BILL" STEALEY

DEAN RAY

**Miss MicroProse pulls skyward with one of the three winners of the "I Cheated Death with Major Bill" Contest. The successful contestants came from New York, Pennsylvania and California.**

Bill Stealey is enthusiastic, infectiously enthusiastic, especially about two things: 1) flying and 2) the computer games developed by MicroProse Software, the company he started in his basement in 1982.

In late August, three MicroProse fans felt Stealey's exuberance up close — and upside down at 5000 feet. They were the winners in the "I Cheated Death with Major Bill" Contest.

For writing the best short essays on why they like MicroProse products, Stealey brought them to MicroProse headquarters in Hunt Valley, Maryland for death-defying, aerobatic jaunts in Miss MicroProse, the company's 1425-horsepower T-28 Trojan airplane.

MARK CIOLA

**Miss MicroProse is a 1425-horsepower T-28 Trojan.**

David Thompson, a 47-year-old manager for Hughes Aircraft in California, had written about Gunship, MicroProse's best-selling simulation of the US Army's Apache attack helicopter. "Don't play Gunship as part of your stress management program," he advised.

The MicroProse simulation of nuclear submarine combat, Red Storm Rising (based on the Tom Clancy novel), was the overwhelming favorite of Rich Costello, 38, a captain in the Philadelphia Police Department.

Joe Bianco, 28, an electrical engineering student from Staten Island, New York, had written to say that F-19 Stealth Fighter, the MicroProse game based on America's top-secret radar-elusive jet, had fulfilled his dream of becoming a fighter pilot — even though years earlier his near-sightedness had kept him from pursuing a pilot's career.

On a quiet, humid Sunday afternoon, "Wild Bill" Stealey drove David, Rich and Joe to Martin State Airport near Baltimore. Standing on the wings of Miss MicroProse,

JESS ARMSTRONG

**Bill Stealey helps Rich Costello prepare for take-off.**

assisted by his son Bill, Jr., Stealey showed the contest winners which cockpit levers to pull and which buttons to push — and which to leave perfectly alone. "If you touch this one," Stealey joked, thinking of the nearby Chesapeake Bay over which they would soon be flying, "I'll call the Coast Guard to pick you up."

Breathtakingly powerful, Miss MicroProse roared to life. In turn, the three winners winged their way skyward with Stealey giving them as much control of the plane as they wanted to take. Above the shimmering Chesapeake, Miss MicroProse looped and rolled and dashed across the sky. Each session of death-cheating lasted about 30 minutes.

JOHN EMORY

**David Thompson touches down as Joe Bianco climbs aboard.**

When the flying was over, David Thompson summed it up best. "It was great to see someone like Bill with all that enthusiasm and energy. He makes everything interesting and fun."

Everything. Especially flying and computer games. ***—Jack Kammer, Gary T. Almes in Hunt Valley***

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# "I Challenge You To Win A Caribbean Vacation!"

—Major "Wild Bill" Stealey
President, MicroProse

**Enter "The Major's Mission" Contest and take off to the Caribbean!**

Just ask your retailer for details on how to receive your Top Secret documents. They contain your mission orders and a tough set of questions on four of our hottest games: F-19 STEALTH FIGHTER, RED STORM RISING, F-15 STRIKE EAGLE II and M1 TANK PLATOON. To find the answers, read through your documents. Then send in your answers to win!

You'll get to preview these four games, plus you'll have the chance to win a fabulous Caribbean vacation, or one of 135 other awesome prizes! So enter now. The Major is counting on you!

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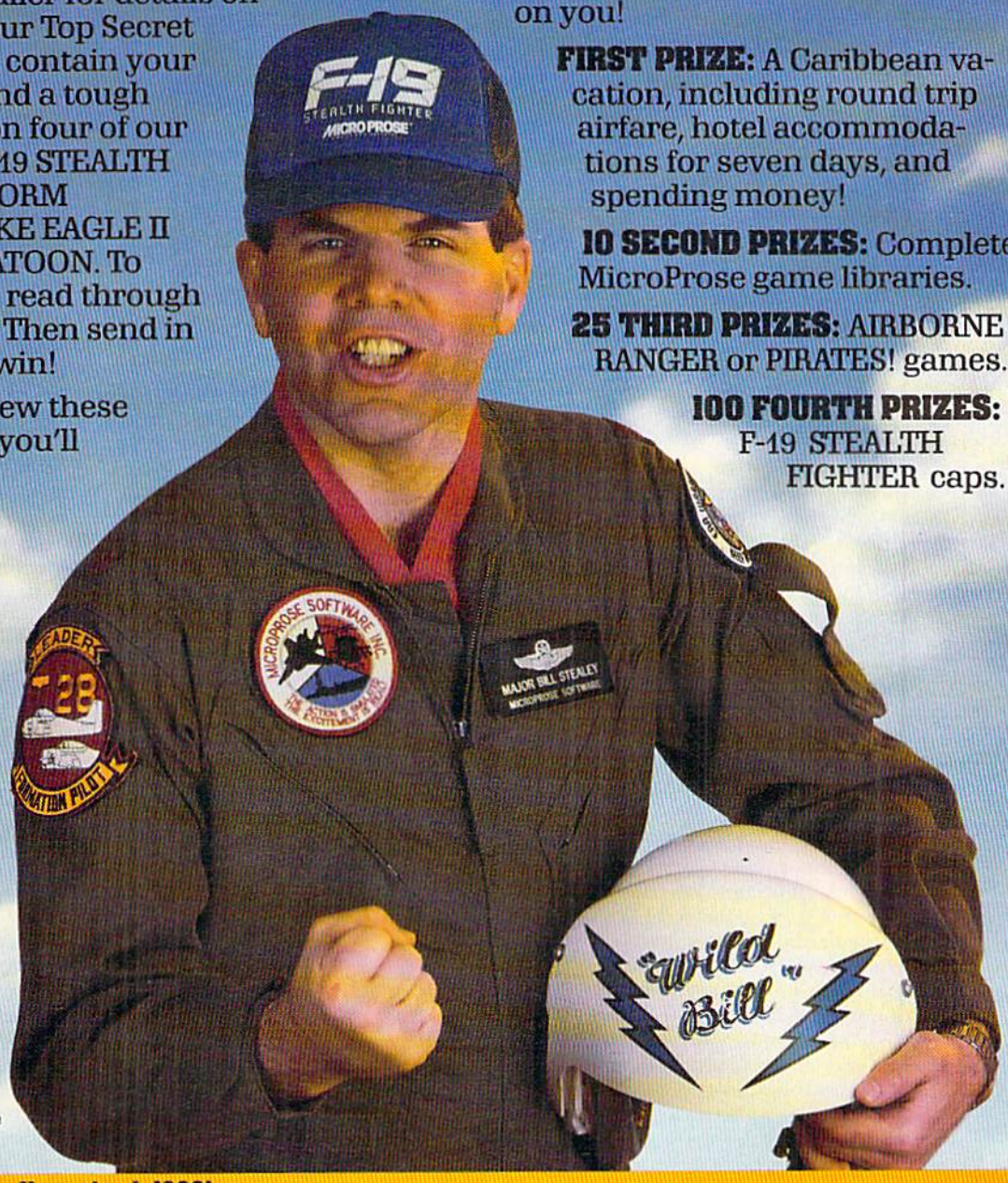


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# SOFTWARE GALLERY

*Flying, fishbowls, destroyers, diamonds and novels. . . read on to find out where all this leads!*

Compiled by BETH S. JALA

## HOLLYWOOD SQUARES ..... A–

*"I Agree" "I Disagree"*

*"Can You Repeat the Question?"*

Another summer gone by and you still haven't made it to game-show heaven? Well, thanks to GameTek, you can appear on Hollywood Squares, rake in oodles of money and amaze your friends by placing among the top ten big winners.

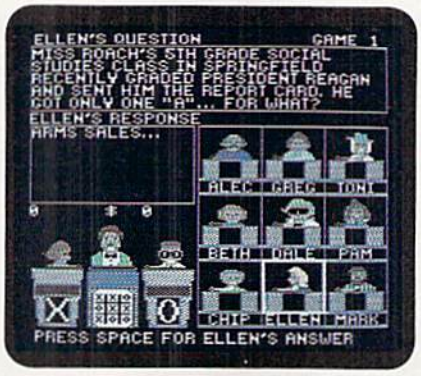
As in the television show, Hollywood Squares' computer contestants aim to win by making tic-tac-toe matches. To be able to place an "X" or an "O" on a square, you must decide whether a celebrity guest's answer to some question is correct or not. If you're right, your symbol goes on the board; a wrong decision places your opponent's symbol. The first player to get three in a row wins a match.

The player with the highest total at the end of three contests wins the game and gets a shot at the car. Naturally, winning the automobile makes all the difference when it comes to top placement among the big winners.

The nine celebrities are shown seated in the game grid ("Squares") on the lower right quarter of your screen. You, your opponent and the show's host appear to the left. Most of the upper screen is used to display the question, correct answer and money totals.

Beeps, honks, music and partially animated figures set just the right semi-frenzied game-show atmosphere. To hold your interest, Squares offers hundreds of questions that run the gamut from pop trivia to serious history, psychology and science. Also, as in the TV version, celebrities always respond with a humorous answer first.

Squares takes a while to load, and you must flip the disk for the car sequence; otherwise, this is a game that does just about everything right. Restart is fast, you can take on another human or computer player (who does, sometimes, miss a question), and high scores are saved to disk. The program




**Turn to your on-screen celebs for answers in Hollywood Squares.**

flags each question to avoid repeats; I found that even in a subsequent reboot, only about 15 percent of the questions were oldies.

Maybe you won't toss out your trusty *Trivial Pursuit* cards, but they're sure to get a much needed rest. For information, value and just plain fun, it's three in a row for Hollywood Squares. *(GameTek, 2999 NE 191st St., North Miami Beach, FL 33180. C-64/$14.95.)*

—JEFF HURLBURT
HOUSTON, TX

### REPORT CARD

**A Superb!**
An exceptional program that outshines all others.

**B Good.**
One of the better programs available in its category. A worthy addition to your software library.

**C Average.**
Lives up to its billing. No major hassles or disappointments here.

**D Poor.**
This program has some problems. There are better on the market.

**E Failure.**
Many problems; should be deep-sixed!

## CHOMP! ..... A–

*Find Fishbowl Frenzy*

*With Your On-Screen Jaws*

When playing Paragon Software's Master Ninja, I assumed the role of a deadly martial arts warrior, and I became a daring commando during sessions of Konami's Rush 'N Attack. But, oddly enough, I had far more fun when Cosmi's Chomp! transformed me into a goldfish.

Loading this game finds you in a pet shop's fishbowl. Your ultimate goal is an open window, which you reach by swimming through a series of tanks. At the journey's end, you leap to the freedom of a river that flows next to the store.

You begin your joystick-controlled quest by feasting on harmless brine shrimp, which builds up your strength and body mass. Then it's on to food that fights back—other fish and marine creatures that swallow you unless you devour them first. Successful battles not only bring you closer to the window but also increase your point total for that game.

At the same time, you must avoid the pet shop's cat and monkey, who would love to have you for a snack. For added danger, there are occasional shark attacks. However, by eating a magic waterbug, you temporarily switch sizes with the shark, who then becomes your prey.

Chomp! includes many amusing features. If, for example, you jump poorly and miss landing in one of the bowls, the scene immediately shifts to the time-honored exit route for many aquarium pets—a flushing toilet!

While the program is cute, it's also challenging. The battles with your opponents demand polished arcade skills, and sound tactical decisions are needed to survive the other hazards in the shop.

Supporting the gameplay are tre- ►

# RVF

## HONDA

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Circle 67 on Reader Service card.

mendous graphics and great sound effects. The program's animation provides a convincing illusion of underwater motion.

The software does contain one obvious problem—a wait of approximately three and a half minutes while the game loads. According to the instructions, this dead time is necessary because of the program's vastly extended memory. Cosmi acknowledges this difficulty, stating that "Your patience will be rewarded." Correct!

The only other objection to the software might come from those players who must have awesomely heroic figures in all their games. The plucky little goldfish just won't measure up to that requirement. Others who can appreciate a good game in any type of setting will find much to like in Chomp!. *(Cosmi, 431 N. Figueroa, Wilmington, CA 90744. C-64/$24.95.)*

—WALT LATOCHA
OAK PARK, IL

## THUNDER BLADE ..... B+

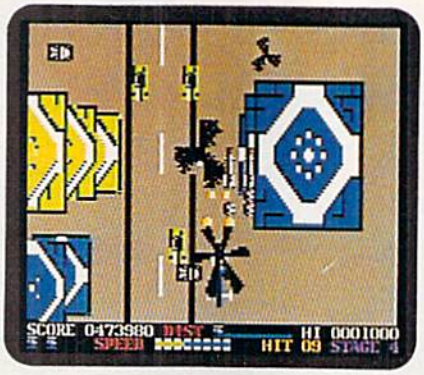
### *Climb into This Attack Chopper and Exterminate the Enemy*

Thunder Blade is an arcade-style shoot-'em-up that lets you pilot a heavily armored attack helicopter. However, unlike many coin-op translations, Thunder Blade isn't a game that you can simply load and play.

There are several stages to Thunder Blade. Each stage consists of three parts: You can view the action from above your chopper as you maneuver through a heavily fortified canyon; get a first-person perspective from behind while jet fighters fly around you; and return to an overhead view as you make your way over a large, well-armed ship. At the end of each stage, you're awarded points depending on the number of enemies you've eliminated.

Although the game comes with only a small, leaflet-style instruction sheet, you must read it thoroughly to understand how to handle your helicopter. One problem is that each part of the game uses a different method of joystick control. For instance, the forward/backward movement used in the first part affects speed and altitude, but in the third part, even though the perspective is the same, you no longer control those two factors, but rather your helicopter's position on the screen.

While Thunder Blade's unorthodox




**The view from above your attack helicopter in Thunder Blade.**

control system can be very frustrating at first, the game can be mastered with some practice. Is it worth the effort? I think so. Thunder Blade has a great arcade feel to it, and although the quality of the graphics varies in the different sections, they are quite good overall. I particularly like the last section of each stage, where you can single-handedly battle a huge, heavily armed ship or tank. Simply trying to reach these payoffs will keep you battling through the early stages and coming back for more. *(Sega; distributed by Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. C-64/$34.95.)*

—BOB GUERRA
CHARLESTOWN, MA

## ROBOCOP ..... B–

### *Part Man, Part Machine, All Business*

It's not pretty in Old Detroit. Whole blocks are swarming with gun-toting thugs; anyone can become a hostage. Things are rough enough for the average citizen, rougher if you're a cop, and really rough for the guy who's actually supposed to do something: RoboCop.

Nominally based upon the movie, RoboCop's scenarios take you from the streets, hostage situations and deadly duels with cop-killers and rogue robots to the final confrontation with OCP Corp's Dick Jones. You have just a few minutes to complete each mission. If time expires or power reaches zero, you're finished!

In five scenarios, you move your RoboCop figure left to right (and sometimes up and down) against colorful, thug-drenched multi-screen backdrops. With responsive six-position-plus-firebutton controls, you direct movement, aim and (with practice!) pull off combinations like duck-and-fire. To balance the odds, you can pick up precious power-boosting food packets, clips of handy three-way bullets and boxes of gang-busting armor piercers. Backgrounds are not scrolled, but screen changes are so fast you'll hardly notice. Overall, the effect is very similar to an FBI training village, except that everybody is a bad guy, and you are fair game!

Two hostage sequences, including a boardroom shootout, challenge pure aim-and-blast skills. Ammo is limited and, naturally, blowing away a hostage is considered bad form. You get a breather in one scenario where you construct a composite picture of a key gang member.

RoboCop does a lot of things right: action figures are large enough for good detail, and you can look forward to realistic animation. Add an option for stirring music, and the result is a game that looks and sounds great.

Failure to maintain high scores on disk is only a minor annoyance, since in this game, winning each scenario is what counts. The big problem is high difficulty combined with no Save Game option and no provision to let a player skip levels. Expect many, many replays of the first scenario before you even see the second. If you're good—very good—with a stick, you can also expect many hours of thug-blasting fun. *(Data East, 470 Needles Drive, San Jose, CA 95112. C-64/$34.95.)*

—JEFF HURLBURT
HOUSTON, TX

## DESTROYER ESCORT ..... B+

### *Prepare to Protect*

Your job is to command a destroyer on one of six escort missions in the North Atlantic and to protect your convoy against attacks from enemy planes, surface vessels and submarines.

For use against enemy resistance (the level of which you can choose), there are four different weapons systems available: an anti-aircraft gun, depth charges, torpedoes and a five-inch gun. Each of these battle stations, along with four others—damage, map, ship's status and navigation—is represented by a separate screen that you can reach from any other station or from the bridge.

Be aware, however, that you must access the disk each time you change battle stations. Even when it isn't being read, the disk continues to spin in the drive—probably to speed access time. ►

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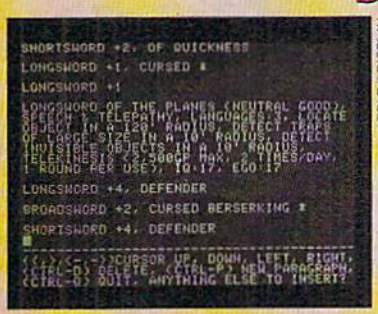
SHORTSWORD +2, OF QUICKNESS
LONGSWORD +1, CURSED
LONGSWORD +1
LONGSWORD OF THE PLANES (NEUTRAL GOOD), SPEECH, TELEPATHY, LANGUAGES, LOCATE OBJECT IN A 120' RADIUS, DETECT TRAP OF LARGE SIZE IN A 10' RADIUS, DETECT INVISIBLE OBJECTS IN A 10' RADIUS, TELEKINESIS (2,500GP MAX, 7 TIMES/DAY, 1 ROUND PER USE), IQ:17, EGO:17
LONGSWORD +4, DEFENDER
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SHORTSWORD +4, DEFENDER
(↑,↓,←,→)CURSOR UP, DOWN, LEFT, RIGHT,
(CTRL-D) DELETE, (CTRL-P) NEW PARAGRAPH,
(CTRL-Q) QUIT. ANYTHING ELSE TO INSERT
APPLE II DISPLAY

Your orders are to chaperone the fleet in Destroyer Escort.

Initially, I found this to be disconcerting, but I didn't notice it much after I'd been out at sea for a while.

One of the game's strong points is that you can adjust the ship's speed and heading from the four major battle screens. This is a great advantage when trying to chase down a German U-boat or defend the convoy against an enemy ship.

Another favorable aspect of Destroyer Escort is that you can generate an automatic air, ship or submarine attack with one keystroke at any time during a mission. This is handy if the going gets too slow, or if you simply want additional practice against a particular type of attack.

Destroyer Escort comes with a well-organized user's manual that clearly explains each station's operation and also provides historical commentary on the use of destroyer escorts during WW II, notes on the equipment and tactics of both destroyers and U-boats, and strategy tips based on the experiences of the game's playtesters. *(Medalist International, a division of MicroProse Software, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/$39.95.)*

—BOB GUERRA
CHARLESTOWN, MA

## BAAL ..... B

### *An Out-of-this-World Kill and Retrieve Mission*

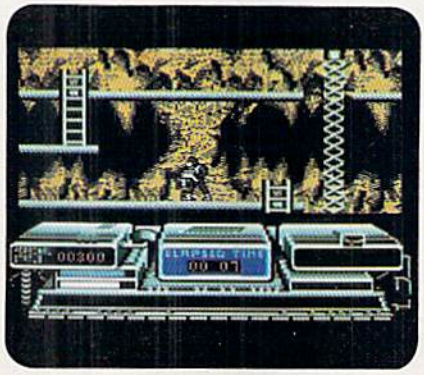
Time to beam out of nowhere to the waiting platform below, as I start this game all over again. Oh no—it's the same green goblin in the same place, snorting fireballs at me. I fought him the last time—drat! Too bad my sixth alter ego got zonked in the previous game, recreating this whole mess. Well, here I go again. Rat-a-Tat-Tat-Tat! Scratch one Slime Mold.

The directions come to mind as I jump and turn, run and climb. I've got to save the earth from Baal and his evil minions who stole a War Machine. That means a life-and-death struggle in every nook and cranny of this booby-trapped, multi-level lair.

Now to blast that generator. I just love watching its outer casing explode. Target shooting like this scores points, which are shown on the info console at the bottom of the screen. Hmmmmm—think I'll climb down that ladder. I'd best be careful; last time I slipped off. Think, think, think—I'm a Time Warrior, trained for strategy.

What's this? A flying serpent, coughing green mucus at me and lowering itself, hovering into my sight. Okay hero, blast away!

Whew, that was close. Now I've got to refuel my laser rifle and find pieces of the War Machine. Then I can transport to the next domain, get a new life and receive an eight-digit code that I can use at any time I want or need to enter this level.



Careful on those ladders; you've got to recover the War Machine in Baal.

I also need to obtain new cartridges to receive additional firing modes, charge up my personal energy field, find a convenient Hovercraft for easy gliding and practice my movements in response to joystick and keyboard controls.

Whoa! Step easy. Wish the Grand Designer hadn't been so whimsical in places. Some pitfalls can't be avoided, except through trial and error. In addition to that, I have a sense of deja vu every time I start a new game. It's like seeing reruns of your favorite movie *ad infinitum*.

Oh, well, nothing's perfect. At least the eye-tickling graphics and intricate sound effects have me doing somersaults.

The directions tell me this game has over 250 separate screens with over 400 traps and 100 monsters, so I can't waste time. I've got to beat the evil Baal and his slimey horde.

B--b-but wait. . .what's that *thing* I see. . .? *(Psygnosis, PO Box 483, Addison, IL 60101. C-64/$29.95.)*

—JOHN DIPRETE
CRANSTON, RI

## SKY SHARK ..... C+

### *Flying over Enemy Lines Was Never This Dangerous!*

If you've played the arcade hit Sky Shark, you were probably excited to hear that Taito adapted the game for the C-64. In fact, you might even have become frantic if you're familiar with Taito's successful coin-op-to-Commodore conversions of Arkanoid, Operation Wolf and Bubble Bobble.

Relax. After being chopped, sliced and diced to fit into the C-64, Sky Shark lacks the allure of its coin-op progenitor.

Sky Shark is, however, still fun. You command a P-40 fighter plane that flies over a vertically scrolling landscape filled with boats, planes, tanks, forts and other enemy targets.

The key to Sky Shark is to increase your firepower by flying over tokens gained from shooting down eight red planes. Acquiring these tokens increases the P-40's basic two-shot firing rate through a series of six increments.

Controlling your plane is intuitive, which invites you to grab your joystick and start flying. In the first mission, you fly over a forest filled with tanks and forts that unleash an incessant torrent of enemy fire (looking remarkably like big yellow tennis balls!). While engaging the ground targets, you encounter plane after plane shooting at you in your flight path. It's generally advantageous to shoot at everything that comes your way.

Sky Shark suffers from three main drawbacks. When your plane is shot down, you start over only at certain predetermined points in each level. Also, dropping a bomb requires wrenching a hand from the joystick—thus relinquishing control of the plane—to slam the space bar. Finally, the game quickly comes down to memorizing the patterns taken by enemy craft.

Despite these drawbacks, Sky Shark is a solid, straightforward, addicting game. It will provide hours of nerve-rattling fun, unless, of course, you tear up the disk in frustration. *(Taito Software, Inc., 267 West Esplanade, North Vancouver, British Columbia, Canada V7M 1A5. C-64/$29.95.)*

—WILLIAM GATES
DAVIS, CA ■

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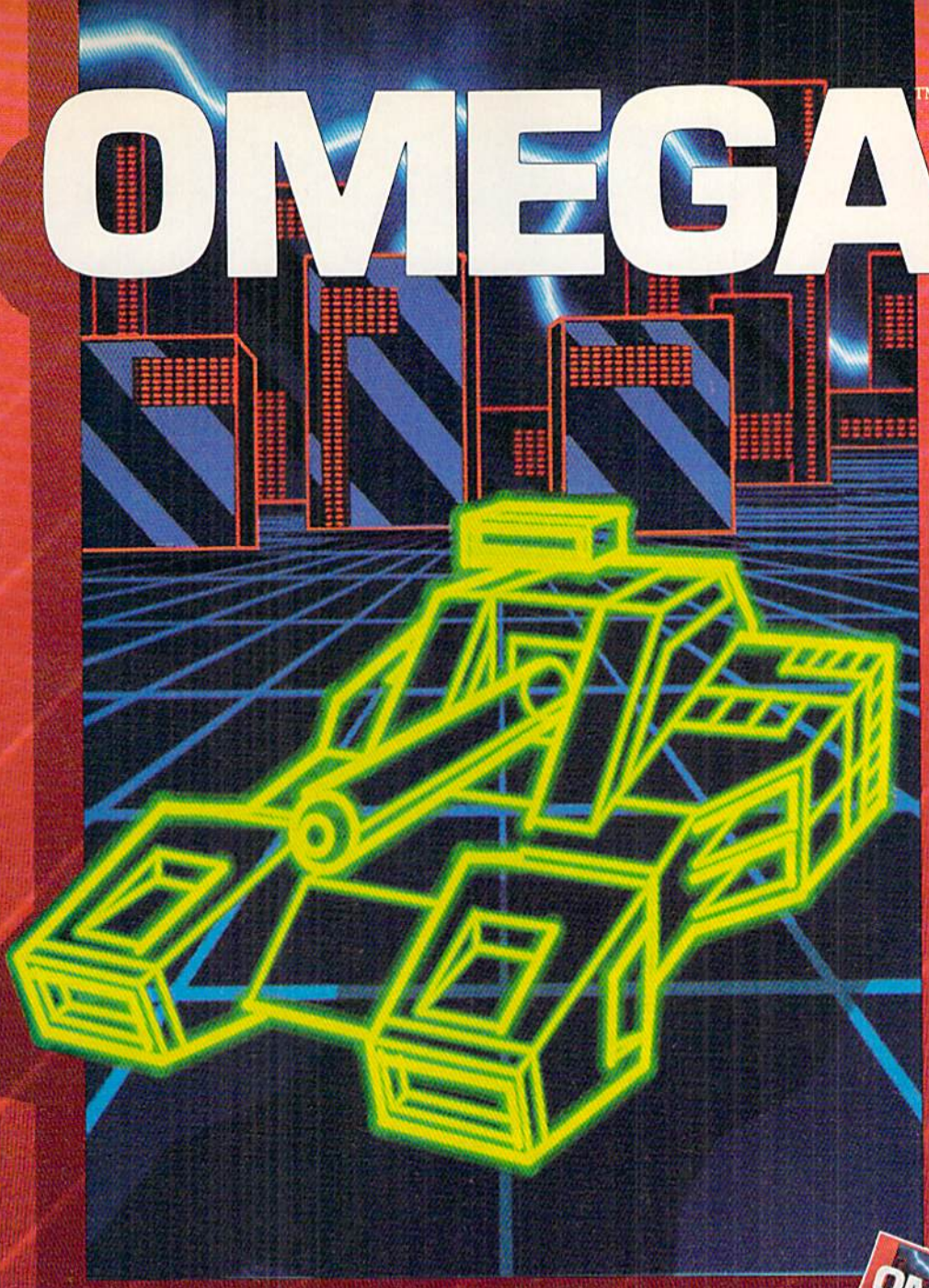

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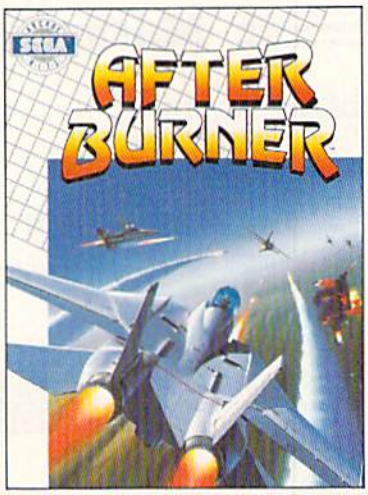


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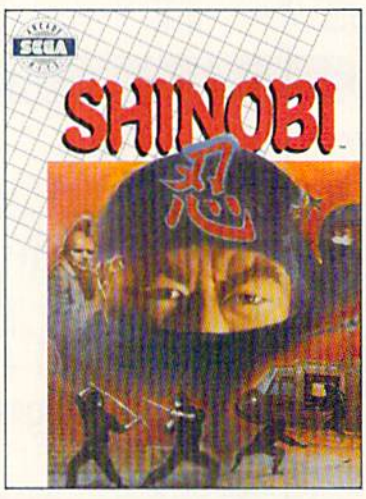


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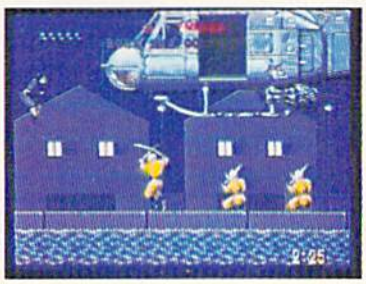

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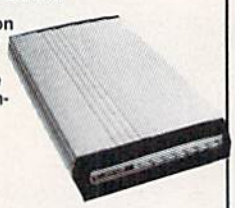

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# Making an Impression with Printers

*Looking for outstanding output at reasonable cost? Here's some advice for potential printer purchasers.*

Whether you're a first-time buyer or a long-time user, choosing a new printer can be frustrating because there are so many on the market. To make selection easier, *RUN* takes a look each year at new machines that are likely to appeal to C-64 and C-128 users.

Since the last roundup (October 1988), a number of new 9- and 24-pin printers priced below $600 have appeared. Technology in this price range has advanced significantly, and features such as paper-parking and multiple fonts, formerly found only on high-end printers, have become more common. Consequently, shopping for a printer is more exciting than ever before, and you're more likely to be pleased with your purchase.

A new trend in the printers I tested this year is the use of sound to signal control-panel input. With older machines, one beep usually meant you were out of paper. With 1989 models, two beeps might represent a particular font selection or indicate that you pressed control-panel buttons in the wrong sequence, while three beeps might mean the printer is ready to accept pitch changes via the control panel. ►

**By TIM WALSH**



PHOTOGRAPHED BY LARRY DUNN

Speaking of control panels, two printers in this roundup, the Panasonic KX-P1191 and Star Micronics NX-2400, have panels that are small technological marvels, sporting a multitude of lights and print options. However, they're a bit complicated to use, and not everyone will enjoy memorizing long sequences of button presses. Fortunately, any well-designed software should provide for letting you select print options from the keyboard.

## ASCII Your Printer

In the past, a half dozen or more Commodore-dedicated serial printers would normally appear each year, each equipped with a 6-pin DIN plug so it could be connected to a C-64 or C-128 serial port just like a second disk drive. However, the only Commodore-dedicated serial printers introduced in 1989 have been the Star NX-1000C and the NX-1000C Rainbow, which I reviewed in the April 1989 issue of *RUN*. All the other new machines, from which I selected the ones described here, are Centronics-type parallel printers that are not dedicated to the Commodore and that therefore require an interface.

All of the printers I tested work well with the C-64 and C-128 if one potential problem can be avoided. Since they are not Commodore-specific, they expect to receive commands in standard ASCII for switching print modes and for activating special features. Now it can happen that even if the output from your computer is in standard ASCII, your interface may convert it to Commodore ASCII, in which case the printer options won't work properly. Compounding this confusion are the scores of different printer drivers found in Commodore programs, plus the wide range of interfaces and printer configurations available.

Fortunately, many programs, including GEOS, have reduced the likelihood of problems by providing custom drivers for every printer, from the current and fashionable to the obsolete and obscure. Besides, most Commodore computerists soon learn the ins and outs of printer control, so they know what works and what doesn't.

If you're a novice printer user and need help getting your printer to work with a specific program, try contacting the software manufacturer or publisher. If the machine won't work properly with *any* software, contact the printer retailer or manufacturer. You can also try your local user's group or an on-line service, such as Q-Link, or a local BBS. Never despair—help *is* available.

All of the printers I examined for this article come with good documentation, including instructions and listings for programming the printer. The listings are in Microsoft Basic, intended for MS-DOS computers, but C-64 and C-128 programmers can use most of them by

# Printer Comparison Chart

| Manufacturer | Model | Printer Emulation | Bit Image Density (Low–High dpi) | Print Pitches (cpi) | NLQ Fonts @ 10 or 12 cpi |
|---|---|---|---|---|---|
| Star Micronics | NX-2400 | Epson LQ series<br>IBM Proprinter | V 6–360 (EP)<br>H 60–360 (EP) | 10,12,15,17,20,P | Courier, Prestige, Script |
| Epson | LQ-510 | Epson LQ series | V 6–360<br>H 60–360 | 10,12,15,P | roman, sans serif |
| | LX-810 | Epson LX series | V 6–216<br>H 60–240 | 10,12,15,20 | roman, sans serif |
| Panasonic | KX-P1180 | Epson FX series<br>IBM Proprinter | V 6–216 (EP)<br>H 60–240 (EP) | 10,12,15,17,20,P | Courier, bold PS, Prestige, sans serif |
| | KX-P1191 | Epson FX series<br>IBM Proprinter | V 6–216 (EP)<br>H 60–240 (EP) | 10,12,15,17,20,P | Courier, bold PS, Prestige, sans serif |
| Seikosha | SP-1600AI | Epson LQ series<br>IBM Proprinter | V 6–216 (EP)<br>H 60–240 (EP) | 10,12,17,20 | Standard NLQ |
| Okidata | Microline 182 Turbo | Okidata Microline | V 6–144<br>H 72–144 | 10,12,17 | Standard NLQ |

cpi = characters per inch; cps = characters per second; CS = speed claimed by the manufacturer; dpi = dots per inch; H = Horizontal; V = Vertical; LQ = Letter Quality; NLQ = Near Letter Quality; P = Proportional; PS = Proportional Spacing; EP = both Epson and IBM Proprinter modes

substituting OPEN 4,4,7 for statements such as WIDTH "LPT1:",255, and PRINT#4 for LPRINT.

## Interfacing

As to interfaces, no new ones have appeared recently, so I stand by my previous favorites: Omnitronix's Hot Shot Plus and Xetec's Super Graphix. I've used both for over a year, printing out text and graphics on many different machines without a hitch.

Regardless of the interface you use, you must be sure it's configured properly for your software. For example, you can keep the interface in MPS-803/1525 mode for normal printing from a word processor, but that mode may not permit underlining and italics. If not, you must set the interface to Transparent mode and select ASCII output from within your software.

Similarly, when printing from graphics-based packages, such as GEOS or RUN Paint, it's important to use the highest density available on your printer to get good definition. For instance, when using an Epson printer driver with an Epson-type printer, you should set the interface to Epson configuration and Transparent mode.

## The Last Word

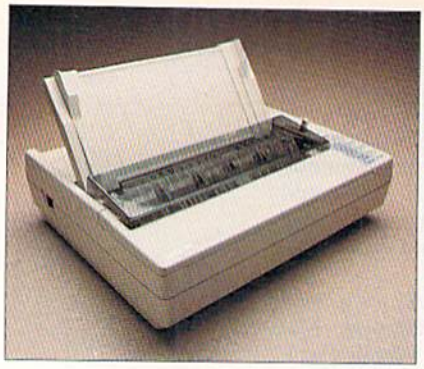
After working with these printers for almost two months, I've picked favorites based on performance and ease of use. In the 24-pin category, I favor the Epson LQ-510 over the Star Micronics NX-2400, both for its darker print in every mode and its superior label handling. If Star could figure out how to darken their print and improve their tractor-feed design, they could corner the 24-pin market on general quality.

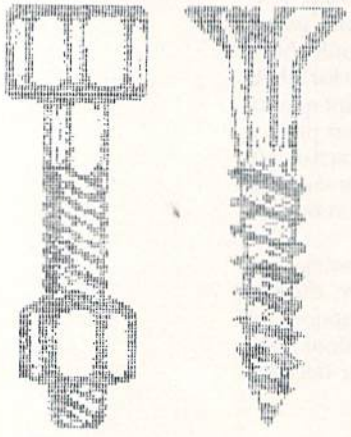
As far as the 9-pins are concerned, it's a dead heat for first place between the Panasonic KX-P1191 and the Epson LX-810 for overall excellence. Second place goes to the Panasonic KX-P1180 because of its fine print quality and paper handling. The Okidata 182 Turbo would have shared in the first place tie if its provision for labels were better. As it is, the 182's superb print quality and speed bring it in third. Tailing in last place is the Seikosha SP-1600AI, with an attractive appearance and acceptable print quality and speed, but marginal paper handling and other remnants of an earlier technology.

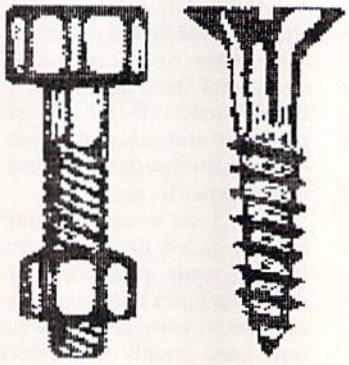
Since I use so many printers in my work, I've become jaded towards them. However, the improved print quality and increased options of these machines have given me a new outlook. The chances of your making a poor printer decision have been greatly diminished. ►

*Tim Walsh, formerly* RUN*'s technical editor, is now a contributing editor to the magazine, as well as technical editor of our sister magazine,* AmigaWorld.

| NLQ or LQ Matrix @ 10 cpi | NLQ or LQ Print Speed @ 10 cpi (CS) | Draft Mode Print Speed @ 10 cpi (CS) | Italic Characters | Underlining | Super- and Subscripts | Buffer Capacity | Dimensions In Inches |
|---|---|---|---|---|---|---|---|
| 24×35 (LQ) | 47 cps | 142 cps | Yes | Yes | Yes | 7K | 16.1×12.9×4.7 |
| 24×29 (LQ) | 50 cps | 150 cps | Yes | Yes | Yes | 8K | 16.5×13.7×5.5 |
| 18×12 | 25 cps | 200 cps | Yes | Yes | Yes | 4K | 16.5×13.7×5.5 |
| 18×18 | 32 cps | 160 cps | Yes | Yes | Yes | 2K | 16.7×13.4×5.2 |
| 18×18 | 40 cps | 200 cps | Yes | Yes | Yes | 6K | 16.7×13.4×5.2 |
| 18×18 | 40 cps | 160 cps | Yes | Yes | Yes | 2.3K | 15.4×10.5×4.7 |
| 18×18 | 40 cps | 186 cps | Yes | Yes | Yes | n/a | 14.2×10.8×3.2 |







## The Tradition Continues

### ♦ The Epson LQ-510 ♦

I never met a late model Epson printer I didn't like, and the 24-pin LQ-510 is no exception. It may not be as option-laden as more expensive models—lacking, for instance, a Quiet mode—but what it does is well done, and it even offers some welcome surprises.

The LQ-510 has two letter-quality fonts: sans serif and roman. As I've come to expect from Epson printers, the print in the letter-quality fonts and graphics is excellent for a dot matrix printer. The characters are beautifully detailed.

You can select Condensed mode from the control panel by pressing the dedicated button. Italics cannot be selected from the control panel, but that's fine, because rarely does an entire document need to be in italic, and that mode is available via software commands.

The LQ-510 powers up in Letter Quality mode. To switch to Draft mode using the control panel, four keypresses are required: the On-line button once, the Font button twice and On-line once more.

The SelecType control panel has been kept simple, and, probably to keep costs down, it forgets settings when the printer is turned off. A built-in push, rather than pull, tractor feed makes the LQ-510's paper handling exceptional, and the feed's adjustability makes mailing labels easy to generate.

While lacking a bottom-feed passageway, the LQ-510 has a handy paper-parking feature called SmartPark that toggles between continuous forms and single sheets. Press the Load/Eject button once and the tractor-feed paper retracts so you can friction-feed single sheets; press it again, and the tractor-feed paper advances, correctly positioned for printing to begin just below the top of the form. With the LQ-510, you never have to worry about manually "fine-tuning" the paper position.

## . . . And Continues Again

### ♦ The Epson LX-810 ♦

The LX-810, a 9-pin printer, is nearly identical in appearance to the LQ-510. Also like its 24-pin brother, it produces excellent print quality and comes with the SmartPark system, placing it well ahead of other low-end 9-pin printers in paper-handling. The documentation is the most thorough you'll find for a 9-pin printer.

The LX-810 differs from the LQ-510 in its control panel. While still a SelecType, it issues a number of beeps to indicate the various print modes and character pitches. For example, one beep means Draft mode, two mean Roman Near Letter Quality (NLQ) mode and three mean Sans Serif mode. Because the beeps are emitted rapidly, you have to tune your ears a bit to distinguish between two and three, and because the beeps are quiet, they may be a problem for those with impaired hearing. An advantage of the LX-810 control panel is its ability to remember settings, even when the printer is turned off.

Oddly, I found this printer louder and slower in NLQ mode than other Epson printers. Fortunately, a high-speed Draft mode complements the normal Draft mode to speed up the printing process.

Overall, the machine is a joy to use on a daily basis.

## A Potential Success Story

### ♦ The Star Micronics NX-2400 ♦

The NX-2400 features the quality and low price traditional with Star Micronics machines, as well as amenities like the Quiet mode and letter quality printing that are common among 24-pin printers.

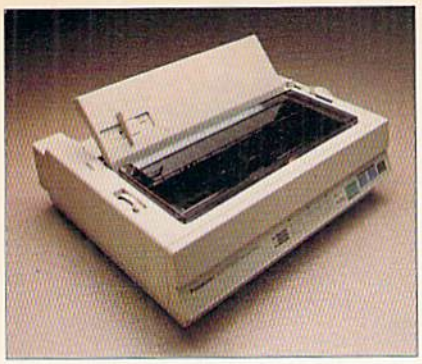
One of the NX-2400's most interesting features is a control panel that offers four fonts, each with an optional Italics mode, and five print pitches. One of the fonts—Script, or longhand—is particularly impressive for a budget-priced 24-pin printer. Through the control panel, you can also make paper-handling selections, including reverse microfeeding of forms.

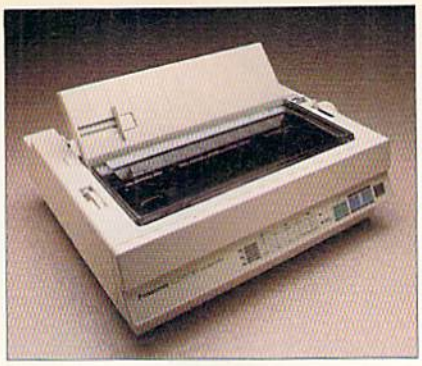
On the minus side, the panel is complicated to use. For example, 11 presses on three different buttons are needed to select the Prestige Italic font with a condensed 10-pica pitch.

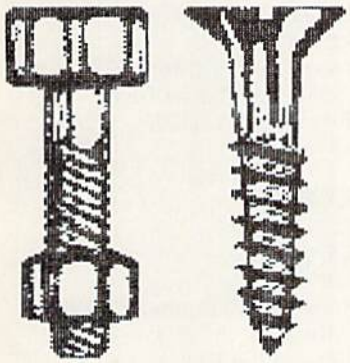
On power up, the NX-2400 defaults to Letter Quality mode instead of Draft mode—perhaps to increase sales of replacement ribbons. The letter quality print is clear and crisp, but too light in my opinion—even lighter than near letter quality on some 9-pin printers.

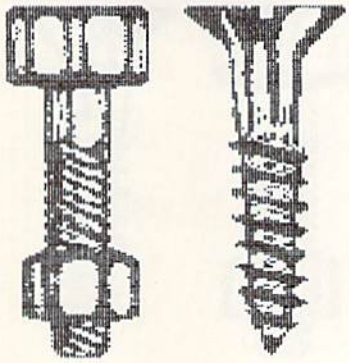
Draft mode can be accessed through software, by flipping an internal DIP switch, or by grappling with the control panel. Just press On-Line once, the Style Pitch button once, the Quiet Mode button eight times or the Paper Feed button once, then On-Line again!

The NX-2400 excels at paper-handling, except for labels, which frequently jam in the tractor-feed unit (located under a removable cover at the rear of the printer). It takes little space, having a footprint smaller than many 9-pin machines.









### What a Bargain!

♦ The Panasonic KX-P1180 ♦

It was a tough order to better the outstanding KX-P1091 9-pin printer, a long-time favorite among Commodore users, but its replacement, the Panasonic KX-P1180, is packed with improvements. The upgrades include a half-speed Quiet mode in NLQ, four control-panel or software-selectable NLQ fonts and a print-head gap-adjustment lever on top of the machine, all of which reflect the new trends in low-end printer technology.

Paper handling has been refined to offer both top- and bottom-feed, plus a fully adjustable push or pull tractor feed for continuous paper. Paper parking has also been added, so you can park continuous forms in the tractor feed while printing individual forms by use of the removable single-sheet guide. Like its predecessor, the KX-P1180 specializes in printing continuous labels; just load the paper and away you go!

In day-to-day use, this printer performs flawlessly. However, until you get the hang of it, selecting print options from the control panel is a bit confusing. First, you must place the printer offline and press the Function button, then press the Form Feed button to cycle forward through the three main print options: Fonts, Pitch and Others. The Others option covers Quiet mode and page length, which can range from 8½ to 14 inches. The Line Feed button cycles back through Others, Pitch and Font, and LEDs indicate the selection you have made.

The KX-P1180 quickly became one of my favorite printers. It's fast, pleasant to use and easy to program via either the control panel or software, and it produces graphics that are second to none for a 9-pin, dot matrix machine. This is an all-around great printer.

### A Gussied-Up 9-Pin

♦ The Panasonic KX-P1191 ♦

As good as the KX-P1180 is, the KX-P1191 performs even better. It's faster (240 characters per second in Draft mode, versus the 1180's 192 cps), it has an expanded control panel with eight LEDs and four buttons, it provides a larger print buffer (6K versus 2K), and Italic mode is selectable via the control panel. The 1191 also offers a Quiet mode, four fonts, nine pitches and a variety of other print options that rival high-end 24-pin machines.

Looking like a clone of its little brother, the 1191 is equipped with the same first-rate paper handling and turns out the same excellent graphics. Moreover, its small size makes it easy to move from desk to desk or office to office.

With the exception of the 24-pin Epson LQ-510, I found myself using the KX-P1191 more than any other printer in this group. It's fast, software-friendly and relatively quiet, and it produces excellent, dark printouts. ►

## The Nuts and Bolts of GEOS To RUN Paint

THE SAMPLE PRINTOUTS accompanying this article were originally GEOS images of bolts drawn with geoPaint by artist Susan Lamb. I imported them into RUN Paint, then printed them. After a little practice using my technique, you too can get geoPaint screens into RUN Paint with a minimum of file fiddling. Here's how I did it:

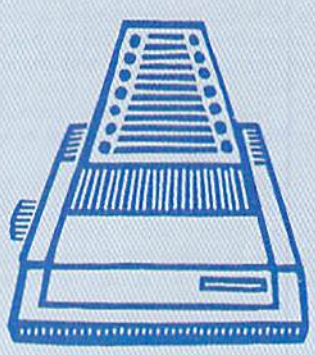
First, I ran the GEOS 2.0 version of geoPaint on a C-128D, loaded the clip art page on *RUN*'s GEOS Power Pak II disk and positioned the page so the full image of the bolts was centered in geoPaint's visible window.

Next, I pressed the C-128D's reset button (the only odd part of this procedure) and ran the GEOS-to-Doodle! utility published in *RUN*'s May 1988 geoWatch column. Only the visible portion of the geoPaint screen was saved to disk as a Doodle! screen-image file. Renaming that file with OPEN 15,8,15,"R0:RPH.GEOS=DD GEOS":CLOSE 15 added the prefix RPH. to the filename, so RUN Paint was able to recognize it as a hi-res screen.

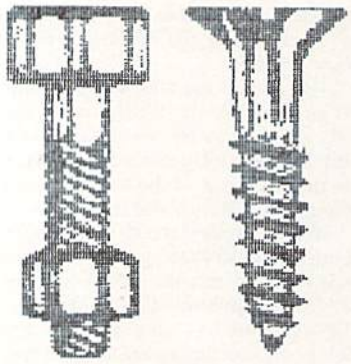
Finally, I printed the image with each printer, keeping my Omnitronix Hot Shot Plus set to Transparent mode and selecting the Epson printer driver from the choices on the RUN Paint print menu.

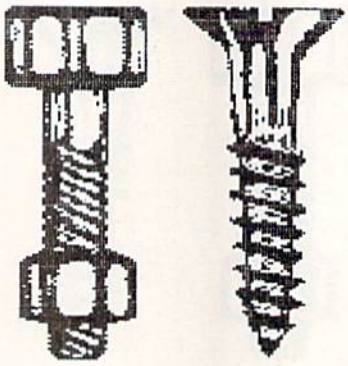
Give my technique a try the next time you want to import a geoPaint or other GEOS screen into RUN Paint. It's remarkably easy! R

—TW



ILLUSTRATED BY BETH KROMMES





## A Blast from the Past?

### ◆ The Seikosha SP-1600AI ◆

With its lack of paper parking, fancy fonts and other amenities, the 9-pin SP-1600AI seems to come from a bygone technological era. Paper handling is clumsy with this machine, and the pull-type tractor feed unit, resting atop the printer, has an unhealthy appetite for even the most carefully aligned continous paper. Unlike the fully automated Epsons and Panasonics in this printer collection, the SP-1600AI must have paper adjusted manually most of the time, and mailing labels are a "maybe" proposition at best.

On the bright side, the 1600AI's fully programmable control panel makes it easy to set print pitches and margins: Just hold down the On-line button to select the desired settings. Also, while Draft mode is slow (160 cps) and the NLQ characters are marginal, the Graphics mode is fantastic, producing much tighter and darker images than, say, the Star NX-2400. Furthermore, the 1600AI's Epson and IBM modes offer a wide, flexible range of print options, including four pitches, italics, proportional spacing, double-strike and more, all at a relatively low noise level.

The Seikosha pales in comparison to the other printers in this parade, but then, it wasn't built for high-volume output. A busy office environment is definitely not where it belongs. On the other hand, for student or home use, the 1600AI is certainly acceptable.

## Friendlier Than Ever

### ◆ The Okidata Microline 182 Turbo ◆

Okidata's best 9-pin printer is the Microline 182 Turbo. Following other recent Okidata machines in offering full Epson compatibility, it works well with any C-64 and C-128 software that has either an Okidata or Epson printer driver. Its graphic reproductions are among the darkest and most finely detailed of all the printers in this group, and the control panel is easy to use. You won't be up nights memorizing sequences of button presses in order to operate this printer.

The 182 Turbo offers three print pitches and just one font in NLQ mode. Along with its default Microline mode, it offers an IBM mode with similar pitch and NLQ options.

When it comes to feeding paper through this machine, all is well until you want to print on continuous-feed labels. The tractor-feed sprockets are located at either end of the platen and can be moved only about one inch, so it's impossible to use labels on narrow backing. The paper handling is also marginal. In spite of top- and bottom-feed options for continuous paper, it's difficult to align the paper properly.

Outside of the mailing-label problem, the 182 Turbo is one of my favorite 9-pin printers. ■

**Table 1. Retail prices and manufacturers' addresses.**

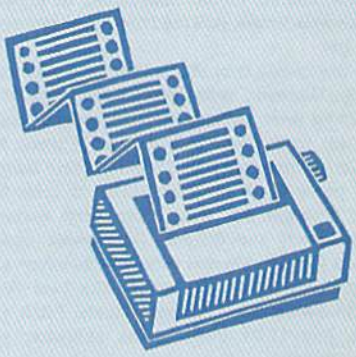
**NX-2400**
$529
Star Micronics, Inc.
200 Park Ave.
New York, NY 10166

**LQ-510**
$529
**LX-810**
$299
Epson America, Inc.
23530 Hawthorne Blvd.
Torrance, CA 90505

**KX-P1180**
$299.95
**KX-P1191**
$399.95
Panasonic Computer Products Division
2 Panasonic Way
Secaucus, NJ 07094

**SP-1600AI**
$329
Seikosha America, Inc.
111 MacArthur Blvd.
Mahwah, NJ 07430

**Microline 182 Turbo**
$339
Okidata
532 Fellowship Rd.
Mount Laurel, NJ 08054



Circle 133 on Reader Service card.

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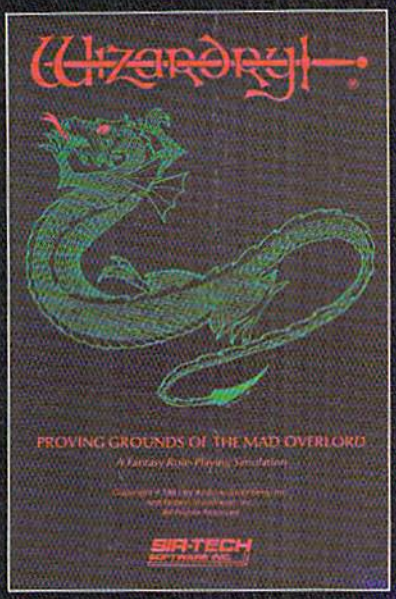


## Now the world of Wizardry comes to Commodore 64/128

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# Friendly File Copier

*Fast and menu-driven for ease of use, it works with any two Commodore-compatible drives.*



By ED PARRY

RUN Copy is a versatile and easy-to-use C-64 multifile/multidrive file copier. It's written completely in machine language for speed, can copy up to 200 files at a time and works with any two C-64-compatible disk drives.

## PRELIMINARIES

Type in Listing 1, "runcopy.bas", using *RUN*'s Checksum program to catch any typing errors, then save it to disk. The disk must be formatted and must also contain at least 50 free blocks. Running "runcopy.bas" will generate the RUN Copy machine language program on the disk.

The writing process takes about five minutes. As the program runs, it displays the numbers of the lines as it works on them. When the disk-write pass is complete, an "all done" message appears on the screen. You then will have a working machine language file copier!

To use RUN Copy, reset your computer (to make sure memory is clear), then load and run it like any Basic program. It loads quickly and will soon display its self-explanatory main screen. The screen lists various fields, including filename, file type, file size, files chosen to copy, files actually copied, and so forth, and offers a choice of three program options, which are explained below. The screen also contains a window that displays messages as you use the program.

While using RUN Copy, you can reset the program at any input prompt by pressing the left-arrow key. To exit RUN Copy, press the run-stop key when no option is pending.

## THE COPY FILES OPTION

Copy Files, the main RUN Copy option, is invoked by pressing the C key. When the program prompts you for the source and destination drive numbers, specify each by using the cursor-right key to increase the default number, or the cursor-down key to decrease it, and then pressing the return key to enter your choice.

Automatic drive limits range from device number 6 (if you're using a hard drive or RAM disk program) through 30. After you have pressed the return key, RUN Copy automatically checks for the presence of the drive, and, if it doesn't find it there, displays an error message.

Note that when it asks for your input, RUN Copy always offers a logical default. To accept the default, just press the return key.

After you've chosen drive numbers, the program will prompt you for a copy pattern. Any standard directory pattern is acceptable, with the default being * (all files). Examples of acceptable copy patterns are shown in Table 1.

Next, RUN Copy will read the source directory, display the first filename that fits in the pattern you chose and ask if you want it copied. Press Y, for yes, to place the filename in the program's internal list of files to be copied, or N, for no, to exclude the file from the list. Pressing A will abort the copy option and reset the program.

Once you've specified the files, copying begins. The program uses the standard disk read/write routines, so you can copy files easily from any standard Commodore disk drive to any other. Slower than some commercial copiers with customized DOS routines, RUN Copy compensates through its maximum disk-drive compatibility.

Utilities (such as JiffyDOS) that speed up read/write operations work well with RUN Copy. Also, when you're us- ►

**Table 1. Examples of acceptable copy patterns.**

| Command | Pattern |
|---|---|
| * | All files in the directory |
| *=P | PRG files only |
| *=S | SEQ files only |
| A* | Files whose names start with A |

**Table 2. Examples of acceptable disk commands.**

| Command | Function |
|---|---|
| >i0 | Initializes a disk (loads the BAM) |
| >v0 | Validates (cleans up) a disk |
| >n0:target disk,RC | Formats a disk as the target, with an ID of RC |
| >n0:erase disk | Erases a formatted disk |
| >u0>m0 | Puts a 1571 drive in 1541 mode |
| >u0>m1 | Puts a 1571 drive in 1571 mode |
| >s0:filename | Scratches a file |

RUN it right: **C-64; two disk drives**

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ing a C-128 and 1571, you can speed things up by putting the drive in 1571 mode via the RUN Copy wedge. Type u0>m1 and then press return to activate this mode.

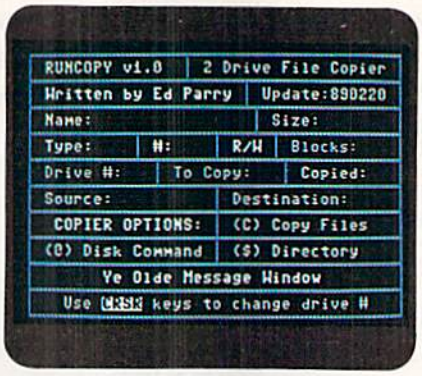
During copying, the R/W field indicators flash back and forth to indicate which phase, read or write, the program is in. Filenames are displayed and the files copied in the order that you chose them.

The * field shows the file number currently being copied, the To Copy field shows the total number of files yet to be done, and the Copied field shows the number of files already completed. A "copy complete" message appears when a copy is finished.

You can abort a copy operation at any time by holding down the run-stop key. It may take several seconds for the abort to take, so keep pressing the key until you see the "copy aborted" message.

## The Disk Command Option

This option lets you send any standard C-64 disk command, so you can scratch files, format new disks, validate disks, and so forth, from RUN Copy.




The RUN Copy main screen.

Examples of acceptable disk commands appear in Table 2. For further help, see the section on disk commands in your drive manual.

Press the @ key to activate the Disk Command option. Then use the cursor and return keys to specify the number of the drive that should receive the command.

Here again, acceptable drive numbers range from 6 to 30, inclusive. RUN Copy will verify the presence of the drive and then prompt you for the command to be sent. Type the command and press return. After execution, the program will display the disk status as returned by the drive.

## The Directory Commands Option

The third RUN Copy option lets you display disk directories. This is similar to using the Disk Command wedge. Specify a drive device number with the cursor and return keys. Then, at the $0> prompt, enter any valid directory pattern (see Table 1) or press return to accept the * default.

In addition to the normal directory information, RUN Copy shows how many files are in the list. At the "pause" message, press any key to return to the main screen.

RUN Copy might not be the fastest file copier around, but it loads quickly, offers maximum drive compatibility and is easy to use. It will make a valuable addition to your utility library. Ⓡ

*Ed Parry, author of EBBS bulletin board software, writes programs and articles for a variety of publications.*

***Running Instructions:*** **Type in Listing 1, using *RUN*'s Checksum program, save it to disk and run it to create the RUN Copy program.**

**Listing 1. RUN Copy.Bas program. (Available on ReRun disk. See card at page 44.)**

```
Ø REM THIS LISTING CREATES (AND
   SHOULD NOT BE CALLED) RUNCOP
  Y                          :REM*168
5 OPEN 8,8,8,"RUNCOPY,P,W"
                             :REM*76
6 CT=Ø:PRINT"{SHFT CLR)":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                         :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1           :REM*141
15 IF LEN(A$)<62 THEN 55
                             :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,2Ø)        :REM*242
25 FOR I=1 TO 3Ø             :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                             :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                 :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                 :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                             :REM*67
5Ø NEXT:GOTO 1Ø              :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 7Ø                      :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
   A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 7Ø                :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
   Ø)+RIGHT$(A$,LEN(A$)-42)
                             :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                             :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                 :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                 :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                             :REM*148
95 NEXT:GOTO 1Ø              :REM*16Ø
1ØØ REM RUNCOPY ML           :REM*141
1Ø1 DATA Ø1Ø823Ø8BAØ49E2Ø323Ø*3
    8363A8A434F5Ø593634*2Ø42592
    Ø45442Ø5Ø4152            :REM*124
1Ø2 DATA 5259AD4341ØØØØØØØØ4C*5
    EØ8ØØØØ8Ø8Ø9ØØØØØØ*ØØØØØØØ
    Ø488A489848AØ            :REM*57
1Ø3 DATA ØØBAFEØ4Ø1DØØ3FEØ5Ø1*B
    DØ4Ø185BEBDØ5Ø185BF*B1BEFØØ
    52ØD2FF9ØE468            :REM*99
1Ø4 DATA A868AA686ØA9ØØ85D485*C
    7A9Ø88D2BØ8A9ØØ8D2Ø*DØ8D21D
    Ø8D2FØ8A9Ø18D            :REM*2Ø
1Ø5 DATA 86Ø2A98Ø8D8AØ24C9FØC*A
    9ØF2ØC3FFA9ØØ2ØBDFF*A9ØFAE2
    BØ8AØØF2ØBAFF            :REM*5Ø
1Ø6 DATA 2ØCØFFA9ØF2ØC3FFA59Ø*8
    D2EØ8DØØ5182Ø39ØC6Ø*2Ø39ØC2
    Ø35Ø89EC45249            :REM*248
1Ø7 DATA 56452Ø232ØØØA9ØØAE2B*Ø
    82ØCDBD2Ø35Ø82Ø4E4F*542Ø5Ø5
    24553454E542E            :REM*226
1Ø8 DATA Ø5Ø7ØØ386ØAØØØ8C2AØ8*A
    ØØØ84D42Ø35Ø8122Ø92*9DØØA9Ø
    185D42ØE4FFFØ            :REM*8Ø
1Ø9 DATA F7C914DØ1CAC2AØ8FØEE*C
    E2AØ8A9ØØ85D42Ø35Ø8*2Ø9D9D2
    Ø9D122Ø929DØØ            :REM*174
11Ø DATA 4CE7Ø8C9ØDFØ11C95FDØ*Ø
    34C5EØ8AC2AØ8CØ1EFØ*C52Ø16E
    7AC2AØ8999F15            :REM*21Ø
111 DATA C8C9ØDDØA8A9ØØ85D4A9*2
    Ø4C16E7A9Ø12Ø55ØBAE*2DØ8A9Ø
    Ø2ØCDBDA92Ø2Ø            :REM*11
112 DATA 16E72ØE4FFFØFBC9ØDDØ*Ø
    EA9ØØ2Ø55ØBAD2DØ88D*2BØ84C8
    1Ø8C95FDØØ34C            :REM*127
113 DATA 5EØ8C91DDØØCAD2DØ8C9*1
    EFØD7EE2DØ8DØCØC911*DØØCAD2
    DØ8C9Ø6FØC7CE            :REM*226
114 DATA 2DØ8DØBØ4C39Ø9A9Ø12Ø*7
    AØBAE2CØ8A9ØØ2ØCDBD*A92Ø2Ø1
    6E72ØE4FFFØFB            :REM*157
115 DATA C9ØDDØØEA9ØØ2Ø7AØBAD*2
    CØ88D2BØ84C81Ø8C95F*DØØ34C5
    EØ8C91DDØØCAD            :REM*156
116 DATA 2CØ8C91EFØD7EE2CØ8DØ*C
    ØC911DØØCAD2CØ8C9Ø6*FØC7CE2
    CØ8DØBØ4C8CØ9            :REM*122
117 DATA A9Ø12ØC4ØBAE2BØ8A9ØØ*2
    ØCDBDA92Ø2Ø16E72ØE4*FFFØFBC
    9ØDDØØ6A9ØØ2Ø            :REM*247
118 DATA C4ØB6ØC95FDØØ34C5EØ8*C
    91DDØØCAD2BØ8C91EFØ*DFEE2BØ ►
```

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```
    8D0C8C911D00C          :REM*121
119 DATA AD2B08C906F0CFCE2B08*D
    0B84CDF09D01018A20B*A0232F
    0FF2035082020          :REM*11
120 DATA 2000609EE32018A20BA0*2
    320F0FFA900AE32084C*CDBDD01
    018A209A0222O          :REM*110
121 DATA F0FF2035082020200060*E
    E3308AD3308D003EE34*0818A20
    9A0222F0FFAD           :REM*195
122 DATA 3408AE3384CCDBDD01O*1
    8A20BA0172F0FF2035*0820202
    0006EE3101818          :REM*244
123 DATA A20BA0172F0FFA900AE*3
    1084CCDBD18A209A00F*20F0FF2
    035082020200O          :REM*25
124 DATA 18A209A00F20F0FFA900*E
    E3008AE3000CCDBD18*A209A00
    720F0FF2035O8          :REM*163
125 DATA 2020202000018A209A007*2
    0F0FFA012B99F15201O*E7C8C01
    5D0F5601BA207          :REM*27
126 DATA A00720F0FFA002B99F15*2
    016E7C8C012D0F5618*A207A01
    E20F0FF2035O8          :REM*208
127 DATA 2020200018A207A01E20*F
    0FFAE9F15ADA0154CCD*BD4818A
    209A0152OF0FF          :REM*201
128 DATA 68D00B2035O805D29A2F*0
    5D7006C901D00D2035*0801512D
    2929A2F05D700          :REM*179
129 DATA 6020350805D29A2F1205*D
    792006O4818A20DA015*20F0FF6
    8F0O5A9122016          :REM*203
130 DATA E7203589FC445535449*4
    E4154494F4E923A0500*6O4818A
    20DA0022OF0FF          :REM*194
131 DATA 68F005A9122016E7203S*0
    89FD34F555243459205*3A0O6O4
    818A20FA0152O          :REM*99
132 DATA F0FF68F005A9122016E7*2
    035089F289EC39F2999*20C34F5
    0592OC6494C45          :REM*237
133 DATA 5392050O6O4818A20BA0*0
    22OF0FF68F005A9122O*16E7203
    50896C4524956          :REM*163
134 DATA 4520239230A50O6O4818*A
    211A0152OF0FF68F005*A9122O1
    6E7203589F28           :REM*153
135 DATA 9E249F29992OC4495245*4
    3544F525992O5O6048*18A211A
    0022OF0FF68F0          :REM*162
136 DATA 05A9122016E7203589F*2
    89E409F29992OC44953*4B2OC34
    F4D4D414E4405          :REM*55
137 DATA 006018A213A0022OF0FF*A
    024A92O2O16E788D0FA*18A213A
    0022OF0FF60A9          :REM*89
138 DATA 012O200BA0220C6FFA0*0
    02OE4FF999E16A5908D*2E08D00
    5C8C0FED0EE8C          :REM*110
139 DATA 2A0820CCFF60A9022O2O*0
    BAD2E08F003EE2A08A2*0320C9F
    FA000B99E162O          :REM*161
140 DATA D2FFC8CC2A08D0F420CC*F
    FA9006O2035080A0E09*9311110
    O2035081FB0C0          :REM*135
141 DATA C0C0C0C0C0C0C0C0C0C0*C
    0C0C0C0B2C0C0C0C0C0*C0C0C0C
    0C0C0C0C0C0C0C0        :REM*123
142 DATA C0C0C0C0C0C0C0AE0DDD20*9
    ED2D5CEC3CFD0D9205O56*312E302
    0201FDD209F32          :REM*224
143 DATA 20C4524956452OC6494C*4
    52OC34F5049455221F*DD0DABC
    0C0C0C0C0C0C0          :REM*145
144 DATA C0C0C0C0C0C0C0C0B1C0*C
    0C0C0C0B2C0C0C0C0C0*C0C0C0C
    0C0C0C0C0C0C0          :REM*127
145 DATA B30DDD2005D752495454*4
    54E2042592OC5442OD0*4152525
    9201FDD2099D5          :REM*40
146 DATA 5044415445 3A38393032*3
    2302O1FDD0DABC0C0C0*C0C0C0C
    0C0C0C0C0C0C0          :REM*199
147 DATA C0C0C0C0C0C0C0C0B1B2*C
    0C0C0C0C0C0C0C0C0C0*C0C0C0C
    0B30D002035O8          :REM*141
148 DATA DD209ECE414D453A2020*2
    0202020202020202020*2020202
    01FDD209FD349          :REM*114
149 DATA 5A453A2020202020202O*2
    01FDD0DABC0C0C0C0C0*C0C0C0C
    0C0B2C0C0C0C0          :REM*105
150 DATA C0C0C0B2C0C0C0B1C0B2*C
    0C0C0C0C0C0C0C0C0C0*C0C0B30
    DDD2099D4595O          :REM*33
151 DATA 453A2020202O1FDD2005*2
    33A2020202O1FDD2005*D22FD72
    01FDD209AC24C          :REM*144
152 DATA 4F434B533A2020202O1F*D
    D0DABC0C0C0C0C0C0C0*C0C0C0B
    1C0B2C0C0C0C0          :REM*206
153 DATA C0B1C0C0C0C0C0B1B2C0*C
    0C0C0C0C0C0C0C0C0C0*B30DDD2
    096C452495645          :REM*82
154 DATA 20233A2020201FDD201E*D
    44F20C34F50593A2020*201FDD2
    09EC34F504945          :REM*40
155 DATA 443A2020201FDD0D0020*3
    508ABC0C0C0C0C0C0C0*C0C0C0C
    0C0B1C0C0C0C0          :REM*112
156 DATA C0B2C0C0C0C0C0C0B1C0*C
    0C0C0C0C0C0C0C0C0C0*B30DDD2
    09FD34F555243          :REM*249
157 DATA 453A2020202020202020*2
    0201FDD209FC4455354*494E415
    4494F4E3A2020          :REM*61
158 DATA 2020201FDD0DABC0C0C0*C
    0C0C0C0C0C0C0C0C0C0*C0C0C0C
    0C0DBC0C0C0C0          :REM*231
159 DATA C0C0C0C0C0C0C0C0C0C0*C
    0C0C0C0B30DDD2020O5*C3CFD0C
    9C5D220CFD0D4          :REM*30
160 DATA C9CFCED33A201FDD209F*2
    89EC39F292099C34F50*592OC64
    94C45532020O           :REM*51
161 DATA 1FDD0DABC0C0C0C0C0C0*C
    0C0C0C0C0C0C0C0C0C0*C0C0DBC
    0C0C0C0C0C0C0          :REM*71
162 DATA C0C0C0C0C0C0C0C0C0C0*C
    0B30D002035O8DD209F*289E409
    F292099C44953          :REM*141
163 DATA 4B20C34F4D4D414E4420*1
    FDD209F289E249F2920*99C4495
    24543544F5259          :REM*166
164 DATA 2020202O1FDD0DABC0C0*C
    0C0C0C0C0C0C0C0C0C0*C0C0C0C
    0C0C0B1C0C0C0          :REM*33
165 DATA C0C0C0C0C0C0C0C0C0C0*C
    0C0C0C0C0B30DDD2020*2020202
    02005D9452OCF          :REM*41
166 DATA 4C44452OCD4553534147*4
    52OD7494E444F5720O2O*2020202
    020201FDD0DAB          :REM*124
167 DATA C0C0C0C0C0C0C0C0C0C0*C
    0C0C0C0C0C0C0C0C0C0*C0C0C0C
    0C0C0C0C0C0C0          :REM*116
168 DATA C0C0C0C0C0C0C0B30DDD*2
    0202090BD553452012O5*C3D2D3D
    2922O9B4B4559          :REM*82
169 DATA 5320544F2043488414E47*4
    52044524956452O232O*2020201FD
    0D002035O8AD           :REM*43
170 DATA C0C0C0C0C0C0C0C0C0C0*C
    0C0C0C0C0C0C0C0C0C0*C0C0C0C
    0C0C0C0C0C0C0          :REM*119
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    039OC2035089FD35441*545553O
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    0252035089EC4          :REM*115
187 DATA 52495645202327532043*4
    14E27542042452O5448*452O534 ►
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188 DATA EF112039C2035089FC3*4
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    D31 8F00 34C44           :REM*14
213 DATA 14A902 9A0B20390CAD*2
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    0C1424F525445            :REM*77
214 DATA 442192 5002 0E1FFF0FB*4
    C3E1 2 3508129FC34F*5 592 C
    34F4D5 4C4554            :REM*67
215 DATA 452192 5004C3E1 0
                             :REM*42
216 DATA -1                  :REM*74
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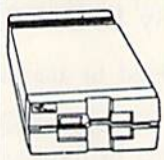

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# Caribe Bein'

*Create your own online character and mingle with others in Q-Link's new tropical hot spot.*

By JOHN RYAN

I recently spent a Saturday night at Sunset Beach, idly contemplating the meaning of life in general, and the origin of the universe in particular. A tropical beach is a good place to do that, especially if it's situated at QuantumLink's new attraction, Club Caribe. As I studied my rugged yet handsome visage (somewhere between RoboCop and Max Headroom) on my monitor, it became apparent that holes in the ozone layer, the search for Spock and the world-wide plankton shortage would have to wait: An island resort beckoned!

Sadly, my good looks are a figment of my C-64's imagination, and the closest I came to sand was the silicon in my computer's central processing unit. Be that as it may, Club Caribe is the nearest many of us will ever come to a tropical resort.

Produced in cooperation with Lucasfilm, Club Caribe is a new interactive online service that incorporates chatting, cartoon animation and real-time simulation into a vacation-like environment. If you belong to a service such as Q-Link, GEnie or American PeopleLink, you may be familiar with the concept of online chatting; assuredly, it's one of the more popular (and lucrative) areas offered by the big commercial boards.

Q-Link has taken the concept one step further by incorporating interactive graphics. The result: You can now *see* who you're taking to and have the opportunity to move from room to room, explore new places and meet new people. Club Caribe is the first and only world-simulation to be implemented on an online chat service.

The Club Caribe environment comes on a double-sided disk ordered directly from QuantumLink (8619 Westwood Center Drive, Vienna, VA 22182; 703-448-8700). (You must also have version 3.0 of Q-Link's program disk.) Once you install the environment on Q-Link's master disk, you can dial Q-Link as usual, then access Club Caribe via the People Connection.

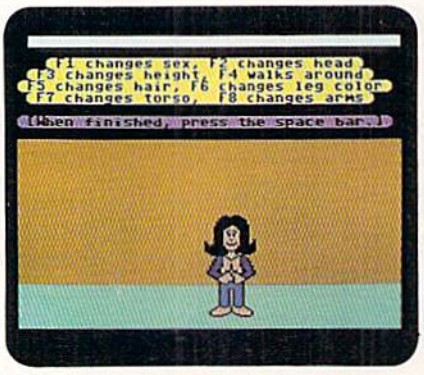
## YOU ARRIVE. . .

On your first visit, you must specify how you want your on-screen self to look. The selection process is straightforward and involves choosing your character's sex, clothes, garment colors and physical attributes. This is really the heart of Club Caribe, for each member is a unique entity—a personality reflected in an on-screen persona.

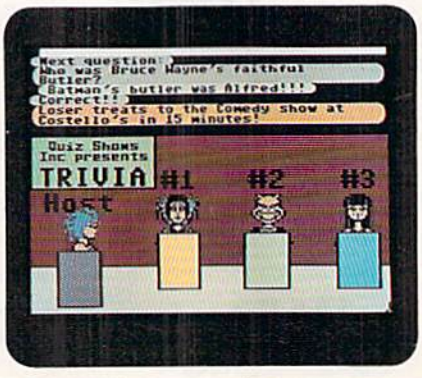
Once past the preliminaries, you can enter the resort as a spectator or guest. As a spectator, your character vanishes and is replaced with a single "eye" in the corner of the screen. This mode provides easy access to any part of the club, even where it's crowded. However, you can't interact with anyone else (which may be fine on your first visit).

As a guest, you guide your character through the club with a joystick. Actions and movements are based on getting, putting, going and doing, each selectable by pressing the joystick in a certain direction.

If you've ever played Lucasfilm's Maniac Mansion or Zak MacKraken and the Alien Mindbenders, you'll probably feel comfortable with Club Caribe's user interface and graphics. The graphics, while not sensational, are nicely done considering the limitations of a project this size on an eight-bit machine, and they're presented in a quasi-three-dimensional aspect. The resort is set up like an adventure, with opportunities to pick up items and store them, either in your pockets or in containers that you purchase. Likewise, you can put tokens (the island's currency) into receptacles such as vending machines and teleports, or spend them ►


F1 changes sex, F2 changes head
F3 changes height, F4 walks around
F5 changes hair, F6 changes leg color
F7 changes torso, F8 changes arms
(When finished, press the space bar.)

**You have a lot of flexibility in designing your character.**

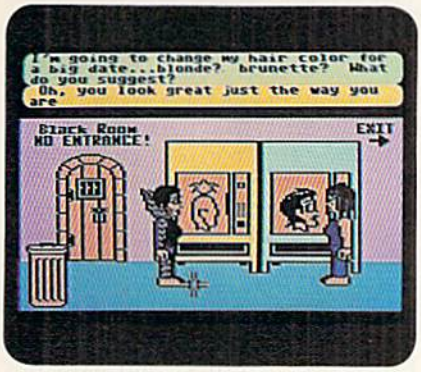



**One room lets you exercise your memory skills in competition.**

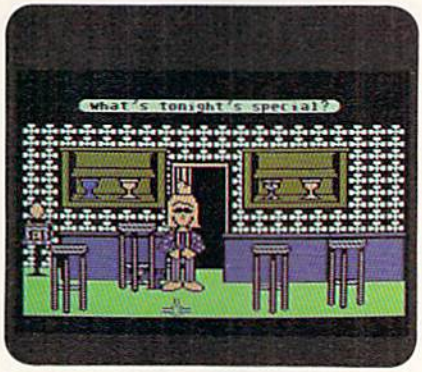
**You can meet new or old friends on the beach or in the bar.**



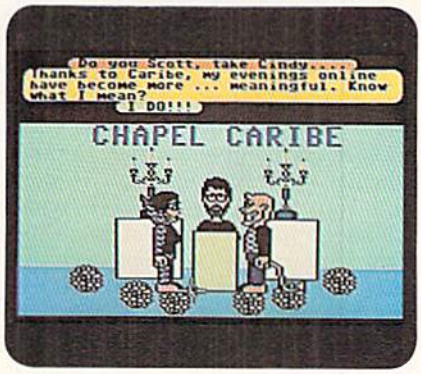
ILLUSTRATED BY ANN DILLON


I'm going to change my hair color for a big date...blonde? brunette? What do you suggest?
Oh, you look great just the way you are
Black Room
NO ENTRANCE!
EXIT

If you don't like the way you look, you can make alterations.




A cool drink in Club Caribe's bar is a hot day treat.


Do you Scott, take Cindy....
Thanks to Caribe, my evenings online have become more ... meaningful. Know what I mean?
I DO!!!
CHAPEL CARIBE

There's almost no limit to what can happen in Club Caribe!

# Non-Habitat Forming

"If ever there was a wiz that was. . ."
—Chorus from *The Wizard of Oz*

If ever there was a wiz that was, it's Club Caribe, the interactive online extravaganza derived from an idea that lit up in the head of programmer Chip Morningstar some years ago. The idea was Habitat, an immense, graphics-based, interactive world-simulation that Lucasfilm proudly announced in 1986 as the new flagship for the young QuantumLink online service.

It was almost too good to be true, really. Assuredly, everyone knew of the graphics prowess of the C-64, which, incidentally, had grabbed the burgeoning software market by its lapels in 1986. Also well known was Lucasfilm, a young software firm respected for its talent with fractal graphics (The Eidolon, Rescue on Fractalus! and Koronis Rift). They seemed the right company at the right time with the right idea.

The technology that makes Club Caribe work today is nothing more than a step-child of the original Habitat idea. Imagine, if you will, a total graphics environment with over 500 different locations, where each user has a separate room to sculpt and decorate as desired. Imagine a world where adventures await you and where teams can be gathered to search for clues, play capture the flag, and do other things that can be done in real life. All from the comfort and safety of your home, connected via modem to Q-Link's massive computer in Vienna, Virginia.

Habitat promised to be a dreamworld for the online user—an alternate reality, a far cry from the crude CB-type interaction available at the time. So the Commodore world waited with eager anticipation. Now, three years later, Habitat remains an elusive dream, replaced with a pared-down version that incorporates only the essence of the technology that would have brought Habitat to life. While this is not necessarily bad (and "something" is always better than nothing at all), what happened?

Steve Arnold, vice-president and general manager of Lucasfilm, explains: "We found that we had pushed the C-64 to its limits, and, if we had it to do all over again—and I'm not trying to insult C-64 owners—we really would have developed the Habitat program on a different system. Once we finished Habitat and really sat down and looked at it, we realized there was a lot more technology needed to do multiplayer gaming—a lot more than we could effectively do on the C-64. So, Club Caribe uses only the technology that was developed by Lucasfilm for Habitat, because of the limitations of the C-64.

"The concept for Club Caribe was conceived by Quantum. They designed the environment and activities of the service, using the technology that had been created for Habitat. Which is why, as Quantum presented Club Caribe to the world, it was promoted as a product that used Lucasfilm's Habitat technology."

Whether Club Caribe will evolve into the system envisioned by the pioneers of Habitat remains to be seen, but considering the enthusiastic initial reaction of the public, it's in both Lucasfilm's and Quantum's interest to pursue the idea further.

Arnold remains optimistic about enhancements to Club Caribe. "Certainly, we would be interested in seeing the world of Club Caribe evolve in new directions, based on the things users are interested in and the feedback we get from the people playing it. One of the visions of Habitat was users themselves helping to shape the universe, although that was one of the things that became technically difficult to implement."

Don't get the idea that Club Caribe is a half-baked attempt to implement a vision that was too far ahead of its time. Both Lucasfilm and Quantum are proud of the technology and innovation behind Club Caribe—and rightly so. Club Caribe is light-years ahead of Q-Link's closest competition, and even brighter lights will shine in the future. R

—JR

in any of the resort's numerous shops. The Do command is used to manipulate the multitude of objects you'll find at Club Caribe.

Each section of the island is divided into "rooms." When you enter a room, you'll probably find several other guests there, engaged in one activity or other, whether it be idle chatter or exploration. You converse with others by typing comments into a command line, which then appears in a "balloon" over your character. Moreover, your character can walk, jump, wave, point, bend and frown—just about anything to get your point across. Prepare yourself, though: Whereas you're just a "handle" on many online services, any action you take at Club Caribe can be seen by everyone in the room!

Attractions on the island include shops and pubs, special event areas, an arcade, beaches, teleporters, automatic teller machines (for your tokens), and more. A map of the island is included with the software and, until you get familiar with the club's layout, you'll be referring to it often. As in Q-Link's People Connection, there are help areas and "guides" to assist you through your first few outings.

Although Club Caribe is not the Habitat (see the sidebar) promised over three years ago, it is a unique and fun alternative to chatting by simply typing text on your monitor. However, there are a few minor irritations associated with using the service.

## KEEP IN MIND. . .

First, you should have a 1200-baud modem (a Commodore 1670 can be had for about $60). I didn't even try using 300 baud, because 1200 was difficult enough.

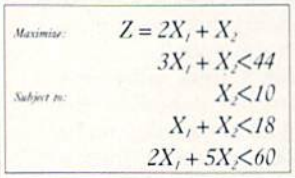
Second, there's a lot of time spent waiting for the disk drive. The drive must load each new area you enter, and while the length of individual loads may be tolerable, when you have to pass through several areas to get to your destination, the minutes add up. The pennies add up too, since Club Caribe is a "plus time" (extra cost) service. At eight cents a minute, I could see my money flying out the window each time I waited for a disk load.

Third, things can slow down to a crawl when several guests are all doing their thing in the same room. Unfortunately, the C-64 is not a multitasking machine, so while one guest moves across the room, the others are frozen in place. With a lot of people in action, you may be lucky just to get a move in edgewise.

Even after several hours at Club Caribe, there are some attractions I haven't yet visited. There's lots to do and see, especially on Friday and Saturday nights when things are positively hopping! Disk loads notwithstanding, Club Caribe offers a lot of play for the penny. So, if you'll excuse me, I'm off to the beach. Just why *are* whales so big, anyway? ■

*John Ryan, one of* RUN*'s contributing editors, is also an air traffic control instructor. Maybe someday he can really fly to Caribbean beaches.*


3 TECHNICAL PROGRAMS

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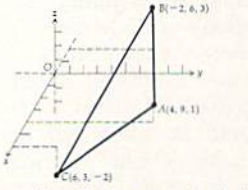

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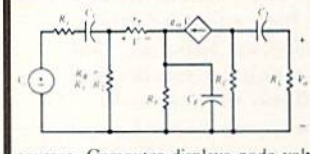
(NOT A GRAPHICS PROGRAM)



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# Build a Better Basic

*Add a host of structured commands to your C-64's built-in Basic.*



By SCOTT WEISGARBER

The C-64 is a great machine, but the built-in Basic 2.0 lacks some useful commands that exist in more recent versions of the language. Enhanced Basic (hereafter called EB) updates Basic 2.0 by adding If/Then/Else and Case commands, labeled Gotos and Gosubs, and While and Repeat loops. Type in Listings 1 and 2 and save them to disk. Then load and run Listing 2, creating EB on disk. To use, run Listing 1.

### If/Then/Else

A Basic 2.0 If statement can be followed by one and only one Then condition; multiple statements and Else conditions aren't possible. EB remedies this lack with an If/Then/Else sequence. The format for the sequence is as follows:

```
10 IF A=1 THEN
20   PRINT:PRINT "YOU SELECTED 1"
30   PRINT "GOOD CHOICE!"
40   ELSE
50   PRINT "YOU DIDN'T SELECT 1"
60   PRINT "PLEASE SELECT
       ANOTHER"
70 ENDIF
```

If you want to do this with Basic 2.0, you must say:

```
10 IF A=1 THEN PRINT:GOTO 50
20 PRINT "YOU DIDN'T SELECT 1"
30 PRINT "PLEASE SELECT
     ANOTHER"
40 GOTO 70
50 PRINT "YOU SELECTED 1"
60 PRINT "GOOD CHOICE!"
70 (Continue with the program)
```

Clearly, the EB code is easier to understand. You can have as many statements as you want following the Then and Else statements. You can also have a Then without an Else. When you're finished with the sequence, close it with an Endif.

There may be times when you prefer an old-fashioned If—for example, when you want to execute only one statement and you don't want to worry about an Endif. That's no problem; just put the statement to be executed right after the Then statement in the line, as shown below:

```
IF A=1 THEN PRINT "YOU
SELECTED 1"
(Continue with the program)
```

The regular Basic 2.0 If appears to EB as a completely different command than the special EB If. The rule is: When there's something after the Then statement in the same line, it's a regular If; when there's nothing after it, it's treated as an EB If.

### Cases Of. . .

The next set of commands is the Cases Of/Case/EndCase/Otherwise/EndCases group. It provides a shorter way to use the If/Then structure when there are many possible values of the checking variable. For example, let's say you were checking user input at a menu. In Basic 2.0, the code might look like this:

```
10 INPUT A
20 IF A=1 OR A=2 THEN GOSUB
     100:GOTO 60
30 IF A=3 OR A=4 THEN GOSUB
     200:GOTO 60
40 IF A=5 THEN GOSUB 300:GOTO 60
50 PRINT "I DON'T UNDERSTAND
     YOUR CHOICE"
60 B=B+1
70 GOTO 10
```

With EB, you can do the same thing using the Case statement:

```
10 INPUT A
20 CASES OF A
30   CASE 1,2:GOSUB 100:ENDCASE
40   CASE 3,4:GOSUB 200:ENDCASE
50   CASE 5:GOSUB 300:ENDCASE
60   OTHERWISE
70   PRINT "I DON'T UNDERSTAND
       YOUR CHOICE"
80 ENDCASES:GOTO 10
```

Once again, the EB version is easier to understand. You start with a simple Cases Of, followed by the variable you wish to check. Then, after finishing with each Case, you close it with an EndCase. If none of the cases holds true, the Otherwise, if present, is executed. When you're completely finished checking the variable, close the sequence with an EndCases.

The variable may be of any type. If it's named incorrectly, you won't get an error message until it's activated by the first Case statement. For example, in

```
10 CASES OF 1A
20 CASE 1:PRINT:ENDCASE
```

variable 1A is invalid, but you won't get an error message until line 20. Any time you try to compare two different types of data, such as a string and a numeric value, you'll also get the error message at the Case statement.

### Looping

Until now you had to use a series of If/Thens and Gotos to build a loop, as shown below:

```
10 PRINT "ALMOST DONE"
20 B=B+1
30 If B< >5 THEN 10
```

EB makes looping easier with the While/Wend and Repeat/Until commands. Here's how they look:

```
WHILE B<>5
  PRINT "ALMOST DONE"
  B=B+1
WEND
```

or

RUN it right: **C-64**

```
REPEAT
  PRINT "ALMOST DONE"
  B=B+1
UNTIL B=5
```

While/Wend and Repeat/Until differ in where the condition is tested. In While/Wend, it's tested at the beginning of the loop; if the condition is false, execution skips to Wend. If the condition is false the first time through the loop, the statements inside the loop will never be executed. Repeat/Until is the opposite. The condition is tested at the end of the loop, so the loop is always executed at least once. Notice that the operators for the two sequences are opposite: While A<>5, Until A=5. Keep this in mind.

### Goto and Gosub

The most obscure commands in Basic have got to be Goto and Gosub, because all they contain are meaningless numbers. For instance, in

```
GOTO 100
GOSUB 3000
```

what's in line 100? What does line 3000 do? What happens if you change the line numbers, making line 100 become line 130? This lack of clarity can lead to problems—problems that EB solves by letting you use meaningful labels enclosed in quotes as targets:

```
"MAIN LOOP"
PRINT "*******"
INPUT A
IF A=1 THEN GOTO "MAIN LOOP"
```

or

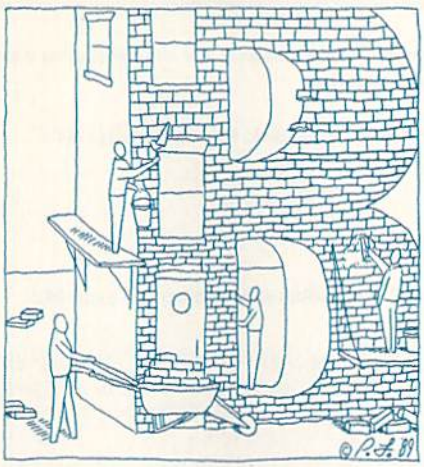
```
GOSUB "DO TWICE"
.
.
.
"DO TWICE":F=F+2:RETURN
```

Just remember to put the targets in quotes. Also, notice how the If in the Goto example uses the regular If format.

Of course, what good are labels if you can't use them with the On command? Well, you can, as this example illustrates:

```
INPUT A
ON A GOSUB "ONE","TWO",
"THREE","FOUR"
```

You can do the same with Goto. What



if you want to use regular line numbers as targets? Once again, I anticipated your needs, giving you the option of using either. Both of the formats below are acceptable in EB:

```
GOTO 100
GOSUB "HELLO"
ON A GOSUB 300,500
ON A GOTO "UNO","DOS"
```

### Indentation

In addition to fancy commands, most Basic interpreters use indentation to make programming easier. Following that lead, I've provided an automatic indenter. It not only works by itself, but it helps you find errors.

Let me explain what I mean by indenting. In the above examples, you may have noticed that statements following special key words are indented. These key words, which I call "indent" words, include If, Cases Of, Case, While and Repeat. Whenever EB hits one of them, it indents all words that follow until an "end" word appears. With the end words—EndCase, EndCases, EndIf, Until and Wend—the indentation ceases. For instance,

```
WHILE A<1
  (Indented lines)
WEND
```

### Error-Avoiding Rules

It's important to adhere to the following rules, or your program won't work properly:

While, Wend, Repeat, Until and Cases Of must be on lines by themselves.

Never put a comma inside the testing part of a Case statement, or you'll get an error.

Make sure that the variable name in a Cases Of statement is no more than nine characters long. If it's longer, it will cause a syntax error.

You can have only one Cases Of statement active at once. Do not try to nest them.

When using labels with the On command, put nothing after the last label. For example, don't write

```
ON A GOSUB "ONE","TWO":PRINT
"THIS WILL CAUSE AN ERROR"
```

When using an On command, don't switch between EB and Basic 2.0 forms. For instance,

```
ON GOTO 100, "INIT","START",200
```

would cause an error.

Every indent word must have a matching end word. This is where listing the program comes in handy. If the lister comes across an end word without a previous indent word, it highlights the end word and stops the listing. For example, listing

```
WHILE A<1
  A=A+1
WEND
ENDIF
PRINT "CONTINUE"
```

would produce the following:

```
WHILE A<1
  A=A+1
WEND
ENDIF
```

An easy way to see if you have too many indent words is to list the last line of the program. If it's indented, you have an unpaired indent word.

You can have no more than ten While/Wend and ten Repeat/Until loops going at the same time. That gives you the possibility of 20 nested loops—more than you should ever need. But, just in case, I have provided a few self-explanatory error messages.

### Program Note

Enhanced Basic occupies memory from 49152 to 51148 and uses 51149–51221 for miscellaneous data tables. Keep other programs away from both areas. Ⓡ ►

*Scott Weisgarber, a sophomore in high school when he wrote EB, is also familiar with machine language and Pascal and is learning Cobol and Fortran.*

ILLUSTRATED BY PAUL FISCH

***Running Instructions:*** **Type in Listings 1 and 2 and save them to disk. Load and run Listing 2 to create "Enhanced Basic" on disk. To use the program, just load and run Listing 1, the loader program.**

**Listing 1. Enhanced Basic loader program. (Available on ReRun disk. See card at page 44.)**

```
10 IF A=0 THEN A=1:LOAD"ENHANCE
   D BASIC",8,1          :REM*187
20 SYS 49152             :REM*186
```

**Listing 2. Enhanced Basic creator program. (Available on ReRun disk. See card at page 44.)**

```
0 REM THIS LISTING CREATES (AND
   SHOULD NOT BE CALLED) ENHANC
  ED BASIC               :REM*114
5 OPEN 8,8,8,"ENHANCED BASIC,P,
  W"                     :REM*50
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                     :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1       :REM*141
15 IF LEN(A$)<62 THEN 55
                         :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,
   20)+MID$(A$,43,20)    :REM*242
25 FOR I=1 TO 30         :REM*181
30 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55             :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55             :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*67
50 NEXT:GOTO 10          :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 70                  :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(
   A$,20)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 70            :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2
   0)+RIGHT$(A$,LEN(A$)-42)
                         :REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*140
80 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55             :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55             :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*148
95 NEXT:GOTO 10          :REM*160
100 REM ENHANCED BASIC DATA STA
    TEMENTS              :REM*104
101 DATA 00C0A9008D0BC8A2208C*F
    B00A9A08DFC00B1FB91*FBC8D0F
    9EEFC00CAD0F3        :REM*36
102 DATA AD0BC8D07EA205BD0403*9
    D0FC8BDA0C09D0403CA*10F1A9A
    38D1EA0A9C38D        :REM*183
103 DATA 1FA0A9B88D26A0A9C38D*2
    7A0A9758D2EA0A9C48D*2FA0A95
    48D42A0A9C68D        :REM*58
104 DATA 43A0A9AC8DEBA6A9C58D*E
    CA6A9BC8D20A0A9C68D*21A0A20
    0A99320D2FFA9        :REM*9
105 DATA 1120D2FFBDB2C720D2FF*A
    99D20D2FFA99420D2FF*8ECDC7A
    214A000C8D0FD        :REM*144
106 DATA CAD0FAAECDC7E8E01BD0*D
    B60B7C081C146C2A937*8D010A0
    205BD0FC89D04        :REM*146
107 DATA 03CA10F7602079A5A848*A
    9368D010A900A8A200*A9CB8DD
    0C78CCDC7B900        :REM*163
108 DATA 02F079C922D00EC8B900*0
    2F06FC922D0F6C84CC4*C0C9409
    00CC95B900BC9        :REM*80
109 DATA 8BF007C9800F003C8D0D3*D
    DFDC6F01DBDFDC6F003*E8D0F8E
    8ACCDC7EED0C7        :REM*166
110 DATA ADD0C7C9D7D0BBACCDC7*C
    84CC4C0BDFDC6F00EB9*0002F0D
    9DDFDC6D0D4E8        :REM*73
111 DATA C8D0ED98AAACCDC7C8BD*0
    002990002F004C8E8D0*F4ACCDC
    7ADD0C799002         :REM*172
112 DATA C84CC4C0A000B9002F0*2
    0C8C9D1D0F6888CD0C7*B9000F2
    012C8C9A7D0F6        :REM*96
113 DATA B9002F008ACD0C7A98B*9
    9002A005B9FB01F004*C8D0F8A
    868286008 8DCD       :REM*101
114 DATA C7AD0F003065ADCDC7C9*C
    B905E8CCEC78ECDC7A0*00E9CBA
    AF00CB9FDC6F0        :REM*90
115 DATA 03C8D0F8C8CAD0F4B9FD*C
    6F00EC980F01BC98BF0*2A20D2F
    FC8D0EDA9202 0       :REM*241
116 DATA D2FFACCEC7AECDC7A914*2
    84CF3A6A9452 0D2FFA9*4E20D2F
    FA9442 0D2FFC8       :REM*1
117 DATA 4CAAC1A9492 0D2FFA946*2
    0D2FFC84CAAC1ADCDC7*284C1AA
    7207300EE0AC8        :REM*177
118 DATA A900 8D0EC8209EADAD61*0
    0F00620730 04CE7A720*CEC6C9C
    BF01EC9D2F01A        :REM*206
119 DATA C9D1D0F1EE0EC84C0FC2*2
    07900C9D2D003CE0AC8*2073004
    CE7A7AD0EC8F0        :REM*38
120 DATA EB2079 0C9CBF0CFCE0E*C
    84C0FC22073 0C9CA90*48C9D7B
    044C9D1F0A1C9        :REM*98
121 DATA CBF052C9D2F055C9CFF0*6
    4C9D5D0034C1BC3C9D0*D0034C3
    CC3C9CCD0034C        :REM*20
122 DATA BFC4C9D3D0034CA1C5C9*C
    ED0034C7CC5C9CDD003*4CEBC4C
    9D6D0034C62C3        :REM*76
123 DATA 4CA6C5C922D0C20730 0*F
    007C922D0F720730 20*79004CE
    7A720CEC6C9D2        :REM*240
124 DATA D0F9AD0AC8F009CE0AC8*2
    07300 4CE7A7A9024CAB*C6ACD1C
    7C00AB04A980A        :REM*195
125 DATA A8207300AD7A0099E2C7*A
    D7B0099E3C7209EADAD*6100F00
    9EED1C72079 00       :REM*146
126 DATA 4CE7A7A9008D0DC8207 3*0
    0C9D5D011AD0DC8F006*CE0DC84
    CF4C22073004C        :REM*84
127 DATA E7A7C9CFD0E4EE0DC84C*F
    4C2A9004CABC6ADD1C7*F017CED
    1C7ADD1C70AA8        :REM*241
128 DATA B9E2C78D7A00B9E3C78D*7
    B004CDEC2A9014CABC6*ADD2C7C
    90AB01A0AA820        :REM*79
129 DATA 7300AD7A0099F6C7AD7B*0
    099F7C7EED2C72079 00*4CE7A7A
    9004CABC62073        :REM*221
130 DATA 00ADD2C7D005A9044CAB*C
    6209EADAD6100F0132 0*7900F00
    5207300D0FBCE        :REM*236
131 DATA D2C72079004CE7A7ACD2*C
    78898 0AA8B9F6C78D7A*00B9F7C
    78D7B002079 00       :REM*223
132 DATA 4CE7A7EA2079 00C922D0*0
    720ECC34CA3A8602079*004CA0A
    8EA2079 00C922       :REM*230
133 DATA D0262 0ECC3A9032 0FBA3*2
    0730 0D0FBAD7B0048AD*7A0048A
    D3A0048AD3900        :REM*246
134 DATA 48A98D4820A3A84CAEA7*2
    07900 4C83A8AD2C00 8D*FC00AD2
    B001869028DFB        :REM*116
135 DATA 0090003EEFC00AD7B008D*F
    E00AD7A0038E9028DFD*00B003C
    EFE00A002B1FB        :REM*130
136 DATA C922F023B1FBF003C8D0*F
    9C8C8B1FBD005A2114C*8BE3C89
    8186DFB008DFB        :REM*167
137 DATA 0090003EEFC004C14C4C8*B
    1FDF012C922F00EC93A*F00AC92
    CF006D1FBD0C8        :REM*171
138 DATA F0E9B1FBF007C922F003*4
    C23C4A000B1FB8D1400 *8D6500C
    8B1FB8D1500 8D       :REM*61
139 DATA 64006 0EA209EB748AD7A*0
    08DCDC7AD7B008DCEC7*20CEC6C
    922D01DCAF00F        :REM*8
140 DATA 2073 0F025C92CD0F7CA*D
```

```
    ØF42Ø73ØØ68C98DFØØ3*4CABC34
    CCØC3ADCDC78D          :REM*13Ø
141 DATA 7AØØADCEC78D7BØØ684C*4
    EA9A2ØE4C8BE3AØØØAD*D4C7FØØ
    5A9Ø34CABC62Ø          :REM*183
142 DATA 73ØØFØØ899D5C7C8CØØA*D
    ØF3A9Ø18DD4C7A9ØØ8D*D3C799D
    5C72Ø79ØØ4CE7          :REM*253
143 DATA A7AØØØADD4C7FØ7ØB9D5*C
    799ØØØ2FØØ3C8DØF5A9*B299ØØØ
    2C82Ø73ØØFØØ9          :REM*12Ø
144 DATA C92CFØØ599ØØØ2DØF1A9*Ø
    Ø99ØØØ2AD7AØØ8DCDC7*AD7BØØ8
    DCEC7A9ØØ8D7A          :REM*2Ø9
145 DATA ØØA9Ø28D7BØØ2Ø9EADAD*C
    DC78D7AØØADCEC78D7B*ØØAD61Ø
    ØDØ272Ø79ØØFØ          :REM*39
146 DATA Ø9C92CDØØ5AØØØ4CF2C4*2
    ØCEC6C9D4FØØ7C9D3DØ*F54CA1C
    52Ø73Ø04CE7A7          :REM*51
147 DATA A9Ø54CABC62Ø79ØØFØØ5*2
    Ø73ØØDØFBA9Ø18DD3C7*2Ø79Ø04
    CE7A7ADD4C7DØ          :REM*157
148 DATA Ø5A9Ø54CABC6ADD3C7DØ*Ø
    62Ø73Ø04CE7A72ØCEC6*C9D3DØF
    94CA1C52Ø73ØØ          :REM*64
149 DATA 4CE7A7A9ØØ8DD4C72Ø73*Ø
    Ø4CE7A72ØCDBD48AD8D*Ø229Ø2D
    ØF968Ø8489848          :REM*185
15Ø DATA AØØ4ADDFC78DEØC7B15F*F
    Ø65ADØFØØ3Ø5ØB15FC9*CC9Ø4EC
    9D2BØØDEEEØC7          :REM*6Ø
151 DATA C9CEDØ3F8DØCC84C1DC6*C
    9D7BØ35ADEØC7FØ16CE*EØC7B15
    FC9D3DØ27ADØC          :REM*1ØØ
152 DATA C8FØ22A9ØØ8DØCC84CE8*C
    5AØØØADE1C7FØ3FAØØ2*8CC7ØØB
    15F8D14ØØC8B1          :REM*18
153 DATA 5F8D15Ø04C2DC6C84CC4*C
    5C981FØB2C982FØBFC8*4CC4C5A
    DE1C7FØ17ADDF          :REM*156
154 DATA C7CDEØC79ØØ6ADEØC78D*D
    FC7ACDFC7EED3ØØ88DØ*FAADEØC
    78DDFC768A868          :REM*44
155 DATA·286Ø6Ø2Ø6BA9A9ØØ8DDF*C
    78DE1C7AD2BØØ8D5FØØ*AD2CØØ8
    D6ØØØAØØ1B15F          :REM*181
156 DATA FØ3ØC8C8AD15ØØD15F9Ø*2
    8FØØ388DØØAAD14ØØ88*D15F9Ø1
    BFØ192ØB8C588          :REM*71
157 DATA B15F8DCDC788B15F8D5F*Ø
    ØADCDC78D6ØØØ4C6CC6*18A9Ø18
    DE1C74CAAA6ØA          :REM*43
158 DATA AABDA6C78D22ØØBDA7C7*8
    D23Ø04C47A4EAØ848AØ*4ØA9ØØ9
    9CCC788DØFA68          :REM*252
159 DATA 284C71A82Ø73ØØC9ØØDØ*2
    4AØØ3B17A8D39ØØC8B1*7A8D3AØ
    ØAD7AØØ1869Ø5          :REM*12Ø
16Ø DATA 8D7AØØ8D3DØØ9ØØ3EE7B*Ø
    ØAD7BØØ8D3EØØ2Ø79ØØ*6Ø454C5
    345Ø043415345          :REM*7Ø
161 DATA 532Ø4F46ØØ4341534 5ØØ*4
    F5448455257495345ØØ*5748494
    C45ØØ52455Ø45          :REM*115
162 DATA 4154ØØ8BØØ8Ø8BØØ8Ø43*4
    153455 3ØØ8Ø43415345*ØØ578ØØ
    Ø554E54494CØØ          :REM*8
163 DATA 544F4F2Ø4D414E592Ø4C*4
    F4F5ØD357454E442Ø57*4954484
    F555420574849          :REM*25
164 DATA 4CC5454E4449462Ø5749*5
    4484F55542Ø49C6324E*442Ø434
    1534553Ø4FC6           :REM*46
165 DATA 554E54494C2Ø57495448*4
    F55542Ø52455Ø4541D4*4E4F2Ø5
    Ø524556494F55          :REM*162
166 DATA 532Ø4341534553Ø4FC6*4
    2C75ØC762C772C77EC7*92C72D4
    3495341422Ø44          :REM*181
167 DATA 45434E41484E452D2Ø2Ø*2
    Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø       :REM*211
168 DATA -1                :REM*26
```

■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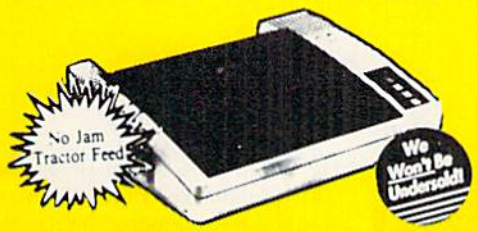


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# W@ll $tr¢¢t 128

*Volatility is the name of the game in this entertaining stock market simulation.*



By MICHAEL BALLARD

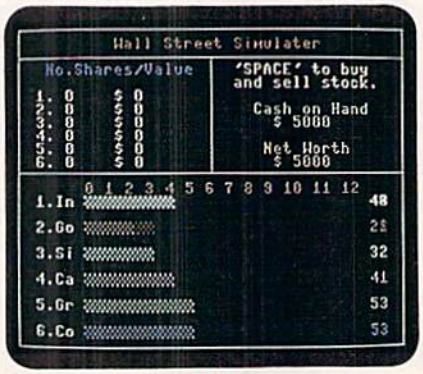
Have you ever wished you could invest in an active stock market without worrying about losing money? Well, now's your chance. In the Wall Street game, you receive $5000 to invest in any of six stock categories, and the stocks make or lose money for you, depending on the wisdom of your investments.

Wall Street is set in a future time, when many of the stock market regulations have been removed. Because of this, the market is extremely volatile; a stock worth $100 one day may be worth only $30 the next, or, in reverse, a stock may suddenly jump from next to nothing to $30. All this means that you must keep a close eye on the screen activity.

The program, Listing 1, is written entirely in Basic 7.0. Type it in using *RUN*'s Checksum program to detect any typing errors, save a copy to disk and then run it.

First you'll see the trading board itself, with your initial $5000 shown in the upper right. The upper left shows how many shares of each type of stock you hold, along with their current values. The net worth figure, back in the upper right, reflects your cash on hand plus the value of the stocks you own.

The large area at the bottom of the screen shows the current market value of each type of stock, both graphically and numerically. As soon as the screen is drawn, these figures will start to change randomly. The most the value of any stock will change per unit time is $10, with two exceptions: Any stock under $10 in value may suddenly jump to $30, and any stock over $100 may suddenly drop to one-third its value.




**Greed can make you lose control—and your fortune—if you're not careful.**

So why not buy all cheap stocks and sell the expensive ones? Because any stock under $10 may also drop to zero, at which point any shares of it you own are removed as worthless. Also, any stock over $100 may start paying dividends, figured on the number of shares owned.

One last obstacle to profit-making is, of course, taxes. Once a year Uncle Sam subtracts your previous net worth from your current net worth and levies a 25 percent tax on the difference, if positive. He doesn't tax actual profit, because, with the market deregulated, people would have too many chances to cheat.

Note that losses aren't tax deductible, and if you lose for more than three years in a row, the government will close down your investment activities. Also, if you lose in the market, yet earn dividends, you must pay 25 percent on the dividends. This may leave you with negative cash on hand, but the only consequence is that you can't buy more stock without liquidating some of what you have.

To start buying and selling and making your first million, press the space bar to go to the Activity menu. The options are Buy Stock, Sell Stock, Instructions, Quit and Return to Market. If you opt to buy or sell, you can choose from Industrials, Gold, Silver, Cattle, Grain and Computers.

All price changes are on hold while you're in Activity mode, and you may enter the mode whenever you wish. If it takes a second for the space bar to respond, it's just that the computer is filing the current price changes first.

The game ends when your net worth falls below $100. Have fun, and remember: Buy low and sell high! Ⓡ

*Michael Ballard, who runs a BBS on one of his two C-128s, is attending school part time with the aim of becoming a full-time programmer.*

***Running Instructions:*** **Type in Listing 1, save it to disk, then run it.**

**Listing 1. Wall Street program. (Available on ReRun disk. See card at page 44.)**

```
10 REM STOCK MARKET SIMULATION
   FOR THE C-128          :REM*82
20 REM BY MIKE BALLARD :REM*230
30 REM DES MOINES, IA 50315
                          :REM*106
40 REM                    :REM*183
50 PRINTCHR$(14)"{SHFT CLR}":PO
   KE53280,0:POKE53281,0:REM*21
60 PRINT"{CTRL 2}{7 CRSR DNs}"S
   PC(14)"{SHFT W}ALL {SHFT S}T
   REET"                  :REM*53
70 PRINT"{CRSR DN}"SPC(15)"{SHF
   T S}IMULATOR"          :REM*5
80 PRINT"{CRSR DN}"SPC(7)"FOR T
   HE {CTRL 3}{SHFT C}-128 {CTR
   L 2}{SHFT H}OME {SHFT C}OMPU
   TER":SLEEP3            :REM*185
90 P$=".":SP$=" ":DD$="$":GS$="
```

RUN it right: **C-128 (in 40-Column mode)**

```
   {COMD +}":CH=5ØØØ:AK$="@":SH
   $="SHARES":PW=CH      :REM*4Ø
1ØØ FORX=1TO6:READS$(X):NEXT
                         :REM*154
11Ø FORX=1TO6:SV(X)=5Ø:NEXT
                         :REM*89
12Ø GOSUB95Ø:DA=Ø:YR=Ø:WO=5ØØØ
                         :REM*198
13Ø GETN$:IFN$=""THENGOSUB187Ø:
    GOSUB75Ø:GOSUB66Ø:UP=1:GOSU
    B99Ø:GOSUB44Ø:GOSUB53Ø
                         :REM*242
14Ø DA=DA+1:IFDA=1ØØTHENGOSUB18
    Ø:DA=Ø:GOSUB113Ø:GOSUB191Ø
                         :REM*186
15Ø IFTA=1THENTA=Ø:GOTO9Ø
                         :REM*61
16Ø IFN$=CHR$(32)THENGOSUB117Ø
                         :REM*65
17Ø GOTO13Ø              :REM*236
18Ø REM                  :REM*66
19Ø REM TAX TIME         :REM*19Ø
2ØØ REM                  :REM*86
21Ø GRAPHICØ:PRINTCHR$(19)+CHR$
    (19)+"{SHFT CLR}"    :REM*23
22Ø YR=YR+1:PRINT"{CTRL 4}{2 CR
    SR DNs}{3 CRSR RTs}{SHFT Y}
    EAR"YR"IS OVER."     :REM*216
23Ø PRINT"{CRSR DN}{5 CRSR RTs}
    {CTRL 9}{CTRL 3}{SHFT U}{CT
    RL 2}N{CTRL 7}C{CTRL 2}L{CT
    RL 3}E{CTRL 2} {CTRL 7}{SHF
    T S}{CTRL 3}A{CTRL 2}M{CTRL
     Ø} {CTRL 4}WANTS HIS SHARE
     OF THE{6 SPACEs}PROFITS.
                         :REM*47
235 SLEEP3               :REM*154
24Ø PRINT" {CRSR DN} {CTRL 4}{S
    HFT Y}OUR NET WORTH AT THE
    BEGINNING OF{5 SPACEs}THIS
    YEAR WAS";:PRINTUSING"#$##,
    ###,###.##";PW;:PRINT"."
                         :REM*22Ø
245 SLEEP3:PRINT"{CRSR DN}{SHFT
     Y}OUR CURRENT NET WORTH IS
    ";:PRINTUSING"#$##,###,###.
    ##";NW               :REM*116
25Ø DF=NW-PW:IFDF=ØTHENSLEEP3:P
    RINT"{CRSR DN}{3 SPACEs}{CO
    MD 7}{SHFT N}O GAIN, NO LOS
    S.{2 SPACEs}{SHFT Y}OU ARE
    FREE TO{4 SPACEs}CONTINUE."
    :SLEEP3:PW=NW:GRAPHIC1:RETU
    RN                   :REM*158
251 IFDF<ØTHENBEGIN:LY=LY+1:DF=
    DF*(-1):PRINT"{3 SPACEs}{CR
    SR DN}{SHFT S}INCE LAST YEA
    R YOU HAVE MANAGED TO{4 SPA
    CEs}LOSE";:PRINTUSING"#$##,
    ###,###.##";DF;:PRINT"!":SL
    EEP3                 :REM*18Ø
252 IFDT>ØTHENBEGIN:LY=Ø:PRINT"
    {3 SPACEs}{CRSR DN}{SHFT Y}
    OU DID HOWEVER EARN";:PRINT
    USING"#$##,###,###.##";DT;:
    PRINT"{4 SPACEs}IN DIVIDEND
    S.":SLEEP3           :REM*34
253 PRINT"{2 SPACEs}{CRSR DN} {
    CTRL 3}{SHFT U}NCLE {COMD 7
    }{SHFT S}AM {CTRL 2}WILL NO
    W TAKE HIS 25% CUT{3 SPACEs
    }OF THAT.":TX=INT(DT/4):DT=
    Ø:NW=NW-TX:PW=NW:CH=CH-TX:C
    H$=DD$+STR$(CH):SLEEP3:GOTO
    28Ø:BEND             :REM*16
254 PRINT"{3 SPACEs}{CRSR DN}{C
    TRL 3}{SHFT T}HIS IS"+STR$(
    LY)+" YEAR(S) OF LOSS.":IFL
    Y>3THENGOTO37Ø:ELSEPRINT"{2
     SPACEs}{SHFT L}OSSES FOR M
    ORE THAN 3 YEARS AND {CTRL
    2}{SHFT U}NCLE {COMD 7}{SHF
    T S}AM {CTRL 3}WILL CLOSE Y
    OU UP!":PW=NW:SLEEP6:REM*46
255 GRAPHIC1:RETURN:BEND
                         :REM*23Ø
26Ø SLEEP3:PRINT"{CRSR DN}{3 SP
    ACEs}{SHFT Y}OU HAVE INCREA
    SED YOUR NET WORTH BY";:PRI
    NTUSING"#$##,###,###.##";DF
    ;:PRINT".":LY=Ø:SLEEP3
                         :REM*8
27Ø PRINT"{2 SPACEs}{CRSR DN} {
    CTRL 3}{SHFT U}NCLE {COMD 7
    }{SHFT S}AM {CTRL 2}WILL NO
    W TAKE HIS 25% CUT{3 SPACEs
    }OF THAT.":TX=INT(DF/4):DT=
    Ø:SLEEP3             :REM*34
28Ø PRINT"{CRSR DN}{3 SPACEs}{S
    HFT Y}OUR TAX BILL IS";:PRI
    NTUSING"#$##,###,###.##";TX
    ;:PRINT".":NW=NW-TX:CH=CH-T
    X:CH$=DD$+STR$(CH):PW=NW
                         :REM*43
29Ø PRINT"{2 CRSR DNs}{CTRL 2}{
    9 SPACEs}{CTRL 9}{SHFT P}{S
    HFT R}{SHFT E}{2 SHFT Ss}{S
    HFT SPACE}{SHFT A}{SHFT N}{
    SHFT Y}{SHFT SPACE}{SHFT K}
    {SHFT E}{SHFT Y}{SHFT SPACE
    }{SHFT T}{SHFT O}{SHFT SPAC
    E}{SHFT C}{SHFT O}{SHFT N}{
    SHFT T}{SHFT I}{SHFT N}{SHF
    T U}{SHFT E}{CTRL Ø}":POKE2
    Ø8,Ø:GETKEYCO$:GRAPHIC1:RET
    URN                  :REM*31
34Ø REM                  :REM*226
35Ø REM THREE YEARS OF LOSS
                         :REM*63
36Ø REM                  :REM*246
37Ø PRINT"{3 CRSR DNs}{3 CRSR R
    Ts}{SHFT Y}OU'VE LOST MONEY
     FOR MORE THAN THREE YEARS.
    "                    :REM*33
38Ø PRINT"{CRSR DN}{2 CRSR RTs}
    {SHFT U}NCLE {SHFT S}AM DOE
    SN'T LIKE THAT."     :REM*128
39Ø PRINT"{11 CRSR RTs}{SHFT Y}
    OU'RE THROUGH!!!"    :REM*26
4ØØ SLEEP3:PRINT"{2 CRSR DNs}{6
     CRSR RTs}{SHFT A}RE YOU BR
    OKE?"                :REM*23
41Ø PRINT"{SHFT W}ELL LET {SHFT
     U}NCLE {SHFT S}AM HELP!"
                         :REM*215
42Ø PRINT"{CRSR DN}{SHFT H}ERE'
    S $5ØØØ TO TRY AGAIN!"
                         :REM*65
43Ø SLEEP2:TA=1:RETURN   :REM*115
44Ø REM                  :REM*69
45Ø REM PENNY STOCK OPTION
                         :REM*232
46Ø REM                  :REM*89
47Ø FORP=1TO6:IFSV(P)<1ØTHENX=P
    :P=6:GOTO5ØØ         :REM*1Ø6
48Ø NEXT                 :REM*96
49Ø RETURN               :REM*122
5ØØ CR=INT(RND(Ø)*2Ø+1):IFCR=5T
    HENSOUND1,4ØØØ,6Ø,1,2ØØØ,2Ø
    ØØ:GOTO52Ø           :REM*48
51Ø RETURN               :REM*142
52Ø SV(X)=3Ø:GOSUB81Ø:RETURN
                         :REM*2Ø5
53Ø REM                  :REM*163
54Ø REM DIVIDENDS        :REM*114
55Ø REM                  :REM*183
56Ø FORP=1TO6:IFSV(P)>1ØØTHENX=
    P:P=6:GOTO59Ø        :REM*154
57Ø NEXT                 :REM*19Ø
58Ø RETURN               :REM*2Ø8
59Ø DV=INT(RND(Ø)*1Ø+1):IFDV=5T ►
```

ILLUSTRATED BY MARCEL DUROCHER

```
    HENDV=INT(RND(Ø)*1Ø+1Ø):DC=
    DV*NS(X):CH=CH+DC:GOTO61Ø
                          :REM*16Ø
6ØØ RETURN                :REM*228
61Ø GRAPHICØ:PRINTCHR$(19)+CHR$
    (19)+"{SHFT CLR}{CTRL 2}{6
    CRSR DNs}"SPC(2)"{SHFT A} D
    IVIDEND OF"DD$DV" IS BEING
    PAID ON:"             :REM*172
62Ø PRINTSPC(2Ø-(LEN(S$(X))/2))
    S$(X)                 :REM*22
63Ø IFNS(X)=ØTHENPRINT"{2 CRSR
    DNs}"SPC(7)"{SHFT T}OO BAD
    YOU DON'T OWN ANY!":ELSEPRI
    NT"{2 CRSR DNs}"SPC(12)"{SH
    FT Y}OU EARNED "DD$DC"!"
                          :REM*24Ø
64Ø PRINT"{2 CRSR DNs}"SPC(9)"{
    SHFT P}RESS A KEY TO CONTIN
    UE"                   :REM*131
65Ø GETKEYG$:GRAPHIC1:GOSUB113Ø
    :RETURN               :REM*98
66Ø REM                   :REM*32
67Ø REM STOCK MARKET CRASH
                          :REM*143
68Ø REM                   :REM*52
69Ø FORP=1TO6:IFSV(P)>1ØØTHENX=
    P:P=6:GOTO72Ø         :REM*137
7ØØ NEXT                  :REM*61
71Ø RETURN                :REM*87
72Ø CR=INT(RND(Ø)*2Ø+1):IFCR=3T
    HENSOUND3,5ØØØ,1ØØ,2,5ØØ,1Ø
    ØØ,3:GOTO74Ø          :REM*96
73Ø RETURN                :REM*1Ø7
74Ø SV(X)=INT(SV(X)/3):GOSUB81Ø
    :RETURN               :REM*213
75Ø REM                   :REM*126
76Ø REM MARKET CHANGES    :REM*81
77Ø REM                   :REM*146
78Ø X=INT(RND(Ø)*6+1):Y=INT(RND
    (Ø)*1Ø+1)             :REM*146
79Ø Z=INT(RND(Ø)*2+1):IFZ=2THEN
    Y=Ø-Y                 :REM*Ø
8ØØ SV(X)=SV(X)+Y         :REM*223
81Ø GOSUB84Ø:GOSUB87Ø:IFSK(X)=1
    THENRETURN:ELSE:SV$(X)=STR$
    (SV(X))               :REM*8Ø
82Ø W=(((X+5)*2)+1):COLOR1,X+1:
    CHAR1,7,(((X+5)*2)+1),"{32
    SPACEs}":CHAR1,7,(((X+5)*2)
    +1),GL$+SV$(X):IFSV(X)=12ØO
    RSV(X)=1THENSK(X)=1:REM*215
83Ø SLEEP1:RETURN         :REM*155
84Ø IFSV(X)<=ØTHENSV(X)=Ø
                          :REM*166
85Ø IFSV(X)>12ØTHENSV(X)=12Ø
                          :REM*167
86Ø RETURN                :REM*233
87Ø GL$="":IFSV(X)=12ØTHENGL$=G
    S$+GS$                :REM*85
88Ø IFSV(X)<12ØANDSV(X)>1THENSK
    (X)=Ø                 :REM*38
89Ø IFSV(X)=ØTHENGL$="":SG=28:G
    OSUB2Ø1Ø:NS(X)=Ø:NS$(X)=STR
    $(NS(X))              :REM*38
9ØØ GL$=GL$+GS$:SG=INT(SV(X)/1Ø
    ):IFSG<1THENGOTO92Ø   :REM*7
91Ø FORQ=1TOSG:GL$=GL$+GS$+GS$:
    NEXT                  :REM*81
92Ø SG=28-LEN(GL$):IFSG=ØTHENRE
    TURN                  :REM*43
93Ø FORQ=1TOSG:GL$=GL$+SP$:NEXT
                          :REM*48
94Ø RETURN                :REM*62
95Ø REM                   :REM*65
96Ø REM TRADING BOARD DISPLAY
                          :REM*51
97Ø REM                   :REM*93
98Ø COLOR1,2:GRAPHIC1,1:BOX1,2,
    2,317,197:COLOR1,3:CHAR1,1Ø
    ,1,"{CTRL N}{SHFT W}ALL {SH
    FT S}TREET {SHFT S}IMULATER
    ":COLOR1,2:DRAW1,2,2ØTO317,
    2Ø:DRAW1,2,9ØTO317,9Ø:DRAW1
    ,158,2ØTO158,9Ø       :REM*12Ø
99Ø FORX=1TO6:NS$(X)=STR$(NS(X)
    ):CM(X)=SV(X)*NS(X):CM$(X)=
    STR$(CM(X)):CS$(X)=STR$(X)+
    P$+NS$(X)             :REM*63
1ØØØ IFCM(X)=VA(X)THEN1Ø3Ø:ELSE
    VA(X)=CM(X)           :REM*166
1Ø1Ø IFLEN(CS$(X))<9THENCS$(X)=
    CS$(X)+SP$:GOTO1Ø1Ø
                          :REM*253
1Ø2Ø IFLEN(CM$(X))<7THENCM$(X)=
    CM$(X)+SP$:GOTO1Ø2Ø
                          :REM*149
1Ø3Ø NEXT                 :REM*14Ø
1Ø4Ø COLOR1,7:CHAR1,3,3,"{CTRL
    N}{SHFT N}O.{SHFT S}HARES/
    {SHFT V}ALUE"         :REM*16
1Ø5Ø IFTT=1THENTT=Ø:CHAR1,1,T+4
    ,"{17 SPACEs}"        :REM*159
1Ø6Ø COLOR1,8:FORX=5TO1Ø:CHAR1,
    1,X,CS$(X-4):CHAR1,1Ø,X,DD
    $+CM$(X-4):NEXT:IFUP=1THEN
    UP=Ø:RETURN           :REM*81
1Ø7Ø FORX=1TO6:X$=STR$(X):SS$(X
    )=X$+P$+LEFT$(S$(X),3)+SP$
    :NEXT                 :REM*77
1Ø8Ø FORX=13TO23STEP2:CHAR1,1,X
    ,SS$(((X-1)/2)-5):NEXT
                          :REM*126
1Ø9Ø COLOR1,3:CHAR1,7,12,"Ø 1 2
     3 4 5 6 7 8 9 1Ø 11 12"
                          :REM*126
11ØØ FORX=1TO6:SV$(X)=STR$(SV(X
    )):NEXT               :REM*162
111Ø FORX=13TO23STEP2:COLOR1,((
    (X-1)/2)-4):CHAR1,7,X,"{11
     COMD +s}":CHAR1,35,X,SV$(
    ((X-1)/2)-5):NEXT     :REM*181
112Ø COLOR1,8:CHAR1,22,3,"{CTRL
     N}'{SHFT S}{SHFT P}{SHFT
    A}{SHFT C}{SHFT E}' TO BUY
    ":CHAR1,22,4,"{CTRL N}AND
    SELL STOCK."          :REM*238
113Ø COLOR1,6:CHAR1,24,6,"{CTRL
     N}{SHFT C}ASH ON {SHFT H}
    AND":CM$=STR$(CH):CHAR1,26
    ,7,"{1Ø SPACEs}":{2 SPACEs
    }CH$=DD$+CM$:CHAR1,26,7,CH
    $:RETURN              :REM*119
114Ø REM                  :REM*6
115Ø REM BUY SELL MENU    :REM*126
116Ø REM                  :REM*18
117Ø PRINT"{SHFT CLR}":GRAPHICØ
    :COLORØ,1:WINDOW7,4,35,2Ø,
    1                     :REM*7
118Ø PRINT"{CTRL 4}{2 CRSR DNs}
    {3 CRSR RTs}1. {SHFT B}UY
    {SHFT S}TOCK":PRINT"{CRSR
    DN}{3 CRSR RTs}2. {SHFT S}
    ELL {SHFT S}TOCK":PRINT"{C
    RSR DN}{3 CRSR RTs}3. {SHF
    T I}NSTRUCTIONS":PRINT"{CR
    SR DN}{3 CRSR RTs}4. {SHFT
     Q}UIT":PRINT"{CRSR DN}{3
    CRSR RTs}5. {SHFT R}ETURN
    TO {SHFT M}ARKET" :REM*111
119Ø PRINT"{2 CRSR DNs}{3 CRSR
    RTs}{CTRL 9}{COMD 1}{SHFT
    E}{SHFT N}{SHFT T}{SHFT E}
    {SHFT R}{SHFT SPACE}{SHFT
    N}{SHFT U}{SHFT M}{SHFT B}
    {SHFT E}{SHFT R}{SHFT SPAC
    E}{SHFT T}{SHFT O}{SHFT SP
    ACE}{SHFT C}{SHFT H}{2 SHF
    T Os}{SHFT S}{SHFT E}{CTRL
     Ø}"                  :REM*113
12ØØ GETKEYM$:M=VAL(M$):IFM<1OR
    M>5THEN12ØØ:ELSEIFM=5THENG
    RAPHIC1:GOSUB113Ø:UP=1:GOS
    UB99Ø:RETURN          :REM*217
121Ø ONMGOSUB126Ø,144Ø,159Ø,176
    Ø                     :REM*226
122Ø GOTO117Ø               :REM*6
123Ø BLOCKS FREE.         :REM*2Ø3
124Ø REM BUY OPTION        :REM*54
125Ø REM                  :REM*116
126Ø RV=Ø                 :REM*2ØØ
127Ø WINDOW6,4,35,2Ø,1    :REM*166
128Ø PRINT"{HOME}{CTRL 4}" :FOR
    X=1TO6:X$=STR$(X):IFX=RVTH
    ENPRINT"{CTRL 9}";:REM*187
129Ø PRINT"{3 CRSR RTs}"+X$+P$+
    S$(X)+" ";:PRINTTAB(2Ø)+DD
    $+SV$(X)+"{CTRL Ø}":NEXT
                          :REM*1Ø7
13ØØ IFRT=1THENRT=Ø:PRINT"{5 CR
    SR DNs}":RETURN       :REM*113
131Ø PRINT"{CRSR DN}{4 CRSR RTs
    }{SHFT C}ASH ON HAND: "+CH
    $                     :REM*213
132Ø PRINT"{CRSR DN}{CTRL 9}{CO
    MD 1}{SHFT E}{SHFT N}{SHFT
     T}{SHFT E}{SHFT R}{SHFT S
    PACE}{SHFT N}{SHFT U}{SHFT
     M}{SHFT B}{SHFT E}{SHFT R
    }{SHFT SPACE}{SHFT T}{SHFT
     O}{SHFT SPACE}{SHFT P}{SH
    FT U}{SHFT R}{SHFT C}{SHFT
     H}{SHFT A}{SHFT S}{SHFT E
    }{SHFT SPACE}{SHFT S}{SHFT
     T}{SHFT O}{SHFT C}{SHFT K
    }"                    :REM*221
133Ø PRINT"{CRSR DN}{CTRL 9}{SH
    FT E}NTER 'Ø' FOR NO PURCH
    ASE"                  :REM*234
134Ø GETKEYN$:N=VAL(N$):IFN<ØOR
    N>6THEN134Ø:ELSEIFN=ØTHENP
    RINTCHR$(19)CHR$(19):RETUR
    N                     :REM*92
135Ø RV=N:RT=1:GOSUB128Ø:REM*23
136Ø PRINT"{CRSR DN}{2 CRSR RTs
    }{SHFT H}OW MANY SHARES ";
                          :REM*253
```

```
137Ø INPUTHS$:HS=VAL(HS$):IFHS=
     <ØTHENGOTO126Ø      :REM*37
138Ø AM=HS*SV(N):IFAM>CHTHENPRI
     NT"{CRSR DN}{CTRL 3}{CTRL
     9}{CRSR RT}{SHFT Y}OU DON'
     T HAVE ENOUGH MONEY!":SLEE
     P2:GOTO126Ø         :REM*15
139Ø CH=CH-AM:CH$=DD$+STR$(CH)
                         :REM*68
14ØØ NS(N)=NS(N)+HS:NS$(N)=STR$
     (NS(N)):GOTO123Ø    :REM*1Ø7
141Ø REM                 :REM*23
142Ø REM SELL OPTION     :REM*254
143Ø REM                 :REM*35
144Ø WINDOW1,4,39,2Ø,1:RT=Ø:RV=
     Ø                   :REM*11Ø
145Ø FORX=1TO6:X$=STR$(X):IFRV=
     XTHENPRINT"{CTRL 9}";
                         :REM*2Ø6
146Ø PRINT"{CTRL 4}"X$P$S$(X);:
     PRINTTAB(14)NS$(X);:PRINTT
     AB(2Ø)SH$SP$AK$;:PRINTTAB(
     3Ø)DD$SV$(X)"{CTRL Ø}":NEX
     T:IFRT=1THENRT=Ø:RETURN
                         :REM*187
147Ø PRINT"{CRSR DN}{9 CRSR RTs
     }{CTRL 9}{COMD 1}{SHFT S}{
     SHFT E}{2 SHFT Ls}{SHFT SP
     ACE}{SHFT W}{SHFT H}{SHFT
     I}{SHFT C}{SHFT H}{SHFT SP
     ACE}{SHFT S}{SHFT T}{SHFT
     O}{SHFT C}{SHFT K}?"
                         :REM*215
148Ø PRINT"{CRSR DN}{6 CRSR RTs
     }{CTRL 9}{SHFT E}{SHFT N}{
     SHFT T}{SHFT E}{SHFT R}'Ø'
     {SHFT SPACE}{SHFT T}{SHFT
     O}{SHFT SPACE}{SHFT S}{SHF
     T E}{2 SHFT Ls}{SHFT SPACE
     }{SHFT N}{SHFT O}{SHFT N}{
     SHFT E}."           :REM*2Ø6
149Ø GETKEYN$:N=VAL(N$):IFN<ØOR
     N>6THEN149Ø         :REM*64
15ØØ IFN=ØTHENPRINTCHR$(19)CHR$
     (19)"{SHFT CLR}":RETURN
                         :REM*6
151Ø IFNS(N)<1THENPRINT"{CRSR D
     N}{2 CRSR RTs}{CTRL 9}{CTR
     L 3}{SHFT Y}OU DON'T OWN A
     NY OF THAT STOCK.":SLEEP2:
     GOTO144Ø            :REM*79
152Ø RV=N:RT=1:PRINT"{HOME}";:G
     OSUB145Ø:RV=Ø:PRINT"{5 CRS
     R DNs}"             :REM*3
153Ø PRINT"{CRSR DN}{4 CRSR RTs
     }{CTRL 9}{SHFT S}ELL HOW M
     ANY SHARES ";       :REM*169
154Ø INPUTHS$:HS=VAL(HS$):IFHS<
     =ØTHEN144Ø          :REM*64
155Ø IFHS>NS(N)THENPRINT"{CRSR
     DN}{4 CRSR RTs}{CTRL 3}{CT
     RL 9}{SHFT Y}OU DON'T OWN
     THAT MANY!":SLEEP2:GOTO144
     Ø                   :REM*176
156Ø NS(N)=NS(N)-HS:CH=CH+(HS*S
     V(N)):CH$=STR$(CH):NS$(N)=
     STR$(NS(N))         :REM*2
157Ø IFNS(N)=ØTHENT=N:TT=1
                         :REM*73
158Ø GOTO144Ø            :REM*122
159Ø REM                 :REM*195
16ØØ REM INSTRUCTIONS    :REM*134
161Ø REM                 :REM*223
162Ø PRINT"{SHFT CLR}{CTRL 3}":
     COLORØ,15:PRINTCHR$(19)+CH
     R$(19)              :REM*153
163Ø PRINTSPC(15)"{SHFT I}{SHFT
     N}{SHFT S}{SHFT T}{SHFT R
     }{SHFT U}{SHFT C}{SHFT T}{
     SHFT I}{SHFT O}{SHFT N}{SH
     FT S}"              :REM*16Ø
1631 PRINT"{CRSR DN}{2 SPACEs}{
     SHFT T}HIS STOCK MARKET GA
     ME IS SET AT A{4 SPACEs}FU
     TURE TIME WHEN THE MARKET
     HAS BEEN{4 SPACEs}GREATLY
     DEREGULATED.{2 SPACEs}{SHF
     T B}ECAUSE OF THIS{3 SPACE
     s}THE MARKET HAS BECOME";
                         :REM*61
1632 PRINT" HIGHLY VOLATILE.{2
     SPACEs}{SHFT B}ECAUSE OF T
     HIS VOLATILITY ALL PURCHAS
     ES ARE CASH ONLY.":REM*251
164Ø PRINT:PRINT"{2 SPACEs}{SHF
     T T}HE MAIN IDEA IS TO BUY
      LOW AND SELL{2 SPACEs}HIG
     H TO TURN A PROFIT. {SHFT
     T}HE BOARD CHANGESA MAXIMU
     M OF 1Ø POINTS AT A TIME."
     ;                   :REM*125
165Ø PRINT" {SHFT T}HE{3 SPACEs
     }PRICE CHANGES AND AMOUNTS
      ARE CHOSEN{4 SPACEs}RANDO
     MLY. {SHFT T}HERE ARE ONLY
      4 EXCEPTIONS{3 SPACEs}TO
     THE BASIC RULES." :REM*154
166Ø PRINT"{CTRL 1}{5 CRSR DNs}
     "SPC(8)"{SHFT P}RESS ANY K
     EY TO CONTINUE":GETKEYQ$
                         :REM*93
167Ø PRINT"{CTRL 3}{SHFT CLR}{C
     RSR DN}1. {SHFT A}NY STOCK
      OVER $1ØØ MAY CRASH. {SHF
     T I}F IT CRASHES A SOUND W
     ILL BE HEARD AND THE{3 SPA
     CEs}STOCK WILL DROP TO 1/3
      OF IT'S CURRENT{2 SPACEs}
     VALUE."             :REM*19
168Ø PRINT"{CRSR DN}2. {SHFT A}
     NY STOCK OVER $1ØØ MAY ALS
     O PAY A{3 SPACEs}DIVIDEND
     OF $1Ø TO $19 PER SHARE. {
     SHFT Y}OU{3 SPACEs}WILL BE
      INFORMED AND THE MONEY AD
     DED TO YOUR CASH ON HAND."
                         :REM*24Ø
169Ø PRINT"{CRSR DN}3. {SHFT A}
     NY STOCK $1Ø AND UNDER MAY
      DROP TO{2 SPACEs}$Ø. {SHF
     T I}F SO ANY STOCK YOU OWN
      WILL BECOME WORTHLESS AND
      WILL BE REMOVED EVEN IF T
     HE STOCK RECOVERS FROM $Ø.
     "                   :REM*166
17ØØ PRINT"{CRSR DN}4. {SHFT A}
     NY STOCK UNDER $1Ø MAY JUM
     P SUDDENLY TO $3Ø (THE ONL
     Y EXCEPTION TO THE $1Ø{2 S
     PACEs}GAIN LIMIT) AS CHEAP
      (PENNY) STOCKS{5 SPACEs}S
     OMETIMES DO."       :REM*121
171Ø PRINT"{CTRL 1}{2 CRSR DNs}
     "SPC(8)"{SHFT P}RESS ANY K
     EY TO CONTINUE":GETKEYQ$
                         :REM*2Ø3
1711 PRINT"{SHFT CLR}{CTRL 3}{2
      CRSR DNs}{3 SPACEs}{SHFT
     Y}OU ARE TAXED AT A RATE O
     F 25% EACH{2 SPACEs}YEAR.{
     2 SPACEs}{SHFT J}UST AS TH
     E MARKET REGULATIONS{3 SPA
     CEs}HAVE CHANGED, {SHFT U}
     NCLE {SHFT S}AM HAS CORREC
     TED{3 SPACEs}SHORTCOMINGS
     IN THE ";           :REM*211
1712 PRINT"TAX LAWS AS WELL.{3
     SPACEs}{SHFT B}ECAUSE OF T
     HESE YOUR TAXES ARE GUARAN
     - TEED TO BE PRETTY STEEP.
     "                   :REM*39
1713 PRINT"{CRSR DN}{3 SPACEs}{
     SHFT T}HE TAXES ARE FIGURE
     D NOT ON PROFITS BUT ON IN
     CREASED NET WORTH AND WHAT
     EVER DIVIDENDS YOU HAVE EA
     RNED THROUGH THE{3 SPACEs}
     YEAR. ";            :REM*115
1714 PRINT"{SHFT L}OSSES HOWEVE
     R ARE NOT DEDUCTIBLE. {SHF
     T A}LSO EVEN IF YOU HAVE A
      LOSS YOU STILL MUST PAY T
     AXES ON EARNED DIVIDENDS."
     ;                   :REM*54
1715 PRINT"{5 SPACEs}{SHFT S}IN
     CE TAXES ARE FIGURED ON NE
     T WORTH BUT TAKEN FROM YOU
     R CASH ON HAND THIS COULD
     LEAVE YOU WITH A MINUS FIG
     URE IN YOUR{2 SPACEs}CASH
     ON HAND.";          :REM*213
1716 PRINT"{2 SPACEs}{SHFT T}HI
     S IS NO REAL PROBLEM{2 SPA
     CEs}BUT DOES REQUIRE YOU T
     O SELL STOCK{6 SPACEs}BEFO
     RE BEING ABLE TO BUY ANY M
     ORE.{2 SPACEs}"     :REM*45
1717 PRINT"{CTRL 1}{2 CRSR DNs}
     "SPC(8)"{SHFT P}RESS ANY K
     EY TO CONTINUE":GETKEYQ$
                         :REM*24Ø
172Ø PRINT"{SHFT CLR}{CTRL 3}{3
      CRSR DNs} {SHFT I}F YOUR
     NET WORTH DROPS BELOW $1ØØ
      THEN YOU ARE TOO POOR TO
     BE ALLOWED TO STAY ON THE
     TRADING FLOOR AND THE GAME
      ENDS."             :REM*16
173Ø PRINT"{CRSR DN}{2 SPACEs}{
     SHFT G}OOD LUCK."  :REM*93
174Ø PRINT"{CTRL 1}{2 CRSR DNs}
     "SPC(8)"{SHFT P}RESS ANY K
     EY TO CONTINUE":GETKEYQ$
                         :REM*233
175Ø RETURN              :REM*99
176Ø REM                 :REM*1Ø4
177Ø REM QUIT            :REM*233►
```

```
178Ø REM                    :REM*132
179Ø PRINT"{SHFT CLR}{CTRL 1}"+
     CHR$(19)+CHR$(19):COLORØ,4
     :PRINT"{7 CRSR DNs}"SPC(12
     )"{SHFT A}RE YOU SURE? {SH
     FT Y}/{SHFT N}"        :REM*89
18ØØ GETKEYQ$:IFQ$="N"THENRETUR
     N                      :REM*143
181Ø IFQ$="Y"THEN183Ø       :REM*175
182Ø GOTO18ØØ               :REM*85
183Ø PRINT"{SHFT CLR}{6 CRSR DN
     s}"SPC(9)"{SHFT Y}OUR FINA
     L NET WORTH WAS"       :REM*214
184Ø PRINT"{CRSR DN}"SPC(2Ø-(LE
     N(NW$)/2))DD$NW$       :REM*156
185Ø END                    :REM*189
186Ø DATA"{CTRL N}{SHFT I}NDUST
     RIALS","{CTRL N}{SHFT G}OL
     D","{CTRL N}{SHFT S}ILVER"
     ,"{CTRL N}{SHFT C}ATTLE","
     {CTRL N}{SHFT G}RAIN","{CT
     RL N}{SHFT C}OMPUTERS"
                            :REM*127
187Ø REM                    :REM*218
188Ø REM NET WORTH          :REM*128
189Ø REM                    :REM*246
19ØØ NW=Ø:FORX=1TO6:NW=NW+CM(X)
     :NEXT:NW=NW+CH         :REM*6Ø
191Ø NW$=STR$(NW):COLOR1,9:CHAR
     1,25,9,"{CTRL N}{SHFT N}ET
      {SHFT W}ORTH":CHAR1,26,1Ø
     ,DD$+NW$+SP$+SP$+SP$
                            :REM*132
192Ø IFNW<1ØØTHENSLEEP1:GOTO194
     Ø                      :REM*152
193Ø RETURN                 :REM*16
194Ø GRAPHICØ:COLORØ,2:PRINT"{S
     HFT CLR}{5 CRSR DNs}{3 CRS
     R RTs}{SHFT Y}OUR NET WORT
     H HAS FALLEN UNDER $1ØØ.
                            :REM*124
195Ø PRINT"{3 CRSR RTs}{SHFT Y}
     OU HAVE BEEN REQUESTED TO
     LEAVE {SHFT W}ALL {SHFT S}
     TREET."                :REM*6Ø
196Ø PRINT"{3 CRSR RTs}{SHFT I}
     F YOU WISH {SHFT I} WILL L
     OAN YOU $5,ØØØ TO TRY AGAI
     N."                    :REM*63
197Ø PRINT"{2 CRSR DNs}"SPC(18)
     "{SHFT Y}/{SHFT N}":REM*98
198Ø GETKEYAN$:IFAN$="Y"THENRUN
                            :REM*1Ø3
199Ø IFAN$="N"THENEND       :REM*184
2ØØØ GOTO198Ø               :REM*61
2Ø1Ø REM                    :REM*97
2Ø2Ø REM LOSE STOCK         :REM*132
2Ø3Ø REM                    :REM*117
2Ø4Ø IFNS(X)=ØTHENRETURN:REM*48
2Ø5Ø GRAPHICØ:PRINTCHR$(19)+CHR
     $(19)                  :REM*23Ø
2Ø6Ø PRINT"{SHFT CLR}{CTRL 2}{4
      CRSR DNs}"SPC(2Ø-(8+(LEN(
     S$(X))/2)))S$(X)" HAS GONE
      BROKE!"               :REM*124
2Ø7Ø PRINT"{CRSR DN}{2 CRSR RTs
     }{SHFT A}LL SHARES OF THIS
      ITEM HAVE BEEN "      :REM*1Ø
2Ø8Ø PRINT"{2 SPACEs}REMOVED FR
     OM YOUR PORTFOLIO.":PRINT"
     {CRSR DN}{2 SPACEs}{SHFT A
     } NEW COMPANY WILL BE CHOS
     EN TO"                 :REM*48
2Ø9Ø PRINT"{2 SPACEs}REPRESENT
     IT ON THE MARKET BOARD."
                            :REM*61
21ØØ PRINT"{2 CRSR DNs}"SPC(9)"
     {SHFT P}RESS A KEY TO CONT
     INUE"                  :REM*82
211Ø GETKEYN$:GRAPHIC1:RETURN
                            :REM*22Ø ■
```


## VIDEO BYTE II the only FULL COLOR! video digitizer for the C-64, C-128

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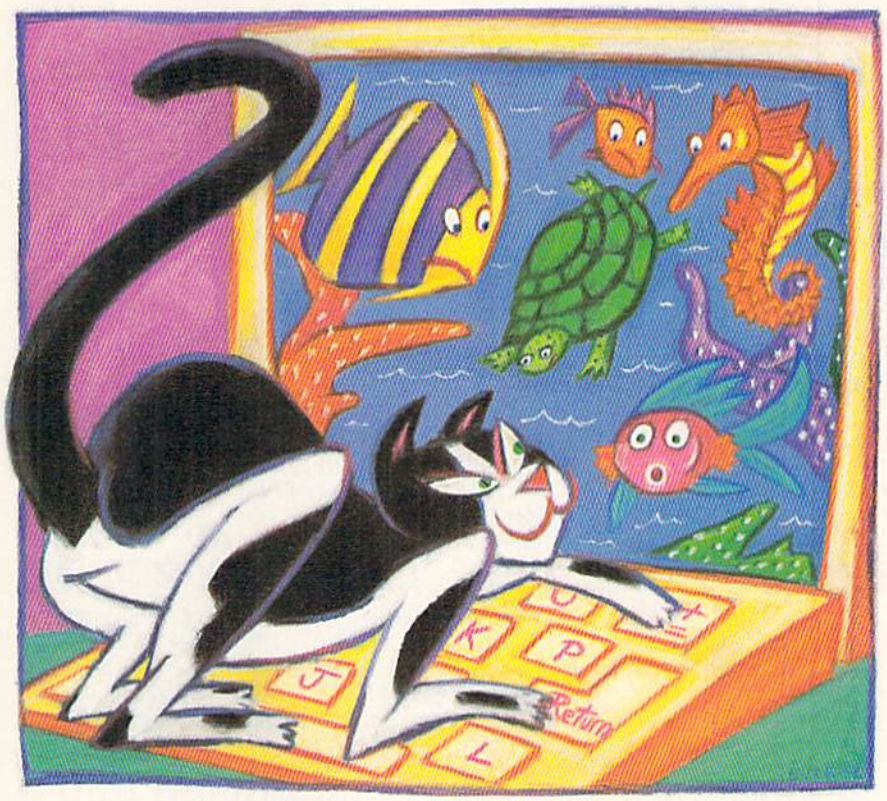
# Deep C-64 World

*Underwater wonders delight your eyes in this colorful electronic aquarium.*



By KEN HUEBNER

How many times have you found your favorite fish floating in your aquarium—stiff as a board? Well, have I got a treat for you! This program will turn your monitor into a colorful tropical aquarium, filled with animated seahorses, angelfish, turtles and a myriad other aquatic delights. You'll never have to look at a lifeless fish again; electronic creatures cannot be overfed, underfed, over- or underheated.

Just type in the program in Listing 1, using *RUN*'s Checksum program to make sure you catch any typing errors, save a copy to disk and run it. Then sit back, relax and watch your underwater world unfold.

I created the Aquarium's multitude of creatures from a few sprite images, varying their color, width, height and sprite/screen priority. The animated plants are built from Commodore graphics characters.

Warning: Before running Aquarium, make sure your cat is in the other room and the stopper is in your monitor! R

*Ken Huebner is a software designer who runs his own business, called Softrek.*

***Running Instructions:*** **Type in Listing 1, save it to disk and run it.**

**Listing 1. Aquarium program. (Available on ReRun disk. See card at page 44.)**

```
10 REM AQUARIUM - K.HUEBNER                :REM*156
60 :                                       :REM*118
80 UO=14336:FI=16384                       :REM*34
90 FX=FI+8:FY=FX+8:FW=FY+8:FH=F
   W+8                                     :REM*2
100 FS=FH+8:XFD=FS+8:YFD=XFD+8
                                           :REM*29
110 FA=YFD+8:FF=FA+8:FP=FF+8
                                           :REM*203
120 WI=FP+8:WC=WI+8:WT=WC+8
                                           :REM*252
130 SF$="{39 SPACEs}"                      :REM*156
140 DIM PX(30):DIM PY(30)
                                           :REM*146
150 :                                      :REM*208
160 FORP=1TO20:READX,Y:PX(P)=X:
    PY(P)=Y:NEXTP                          :REM*83
170 DATA 1,4,1,7,1,10,1,13,1,16
                                           :REM*189
180 DATA 12,9,12,12,12,15
                                           :REM*228
190 DATA 23,2,23,6,23,10,23,14
                                           :REM*254
200 DATA 29,4,29,8,29,12,29,16
                                           :REM*118
210 DATA 4,5,15,10,26,3,32,5
                                           :REM*217
220 :                                      :REM*23
240 Y=UO:READ A$                           :REM*23
250 B$=MID$(A$,1,20)+MID$(A$,22
    ,20)+MID$(A$,43,20):REM*155
260 FOR X=1 TO 59 STEP 2 :REM*8 ►
```

RUN it right: **C-64**

```
27Ø C$=MID$(B$,X,2):H$=LEFT$(C$
    ,1):L$=RIGHT$(C$,1):REM*151
28Ø H=VAL(H$):IFH$>"9"THEN H=AS
    C(H$)-55            :REM*111
29Ø L=VAL(L$):IFL$>"9"THEN L=AS
    C(L$)-55            :REM*129
3ØØ POKEY,H*16+L         :REM*3
31Ø Y=Y+1:NEXTX:READA$   :REM*11
32Ø IFA$<>""THEN 25Ø     :REM*197
33Ø :                    :REM*133
35Ø GOSUB81Ø:POKE53276,255
                         :REM*38
36Ø POKE 53285,Ø:POKE 53286,1:S
    YSUO                 :REM*96
37Ø GOSUB9ØØ:GOSUB39Ø:GOTO37Ø
                         :REM*25
38Ø :                    :REM*183
39Ø I=-1:IFRND(Ø)>.9 THEN RETUR
    N                    :REM*45
4ØØ I=I+1:IFI>7THEN RETURN
                         :REM*127
41Ø IFPEEK(FI+I)>ØTHEN4ØØ
                         :REM*139
42Ø T=INT(RND(Ø)*6)+1    :REM*139
43Ø YD=Ø:XD=255:IFRND(Ø)>.5THEN
    XD=1                 :REM*127
44Ø X=Ø:IFXD=255THENX=17Ø
                         :REM*247
45Ø Y=INT(RND(Ø)*145)+45
                         :REM*243
46Ø XE=INT(RND(Ø)*2):YE=INT(RND
    (Ø)*2)               :REM*115
47Ø S=INT(RND(Ø)*1ØØ)+48
                         :REM*133
48Ø A=2{UP ARROW}(INT(ABS(S-12Ø
    )/32)+2)             :REM*117
49Ø F=Ø:IFXD=255THEN F=1
                         :REM*12Ø
5ØØ P=INT(RND(Ø)*2)      :REM*78
51Ø C=INT(RND(Ø)*16):IFC=6THENC
    =8                   :REM*119
52Ø :                    :REM*64
53Ø IFT=3THENA=(A*2)+A   :REM*123
54Ø IFT=4THENA=Ø:S=INT(S/2):YD=
    255                  :REM*157
55Ø IFT=5THEN S=S+5Ø     :REM*23
56Ø IF T>3 THEN 69Ø      :REM*213
57Ø Z=I                  :REM*215
58Ø Z=Z+1:IFZ>7THEN 69Ø  :REM*23
59Ø IFPEEK(FI+Z)>ØTHEN58Ø
                         :REM*1Ø4
6ØØ POKEWI+I,Z:POKE WT+I,4Ø:POK
    E WC+I,1             :REM*95
61Ø ZO=RND(Ø)*7Ø         :REM*134
62Ø Y=6Ø+ZO:YD=255:GOSUB 73Ø
                         :REM*1Ø4
63Ø :                    :REM*178
64Ø Y=6+ZO:IFYE=1THENY=Y+12
                         :REM*2Ø7
65Ø I=Z:S=255:A=8:X=125:C=1
                         :REM*16Ø
66Ø IFXD=1THENX=X-73:IFXE=1THEN
    X=X+8                :REM*125
67Ø T=7:XD=Ø:YD=1:XE=Ø:YE=Ø
                         :REM*8Ø
68Ø :                    :REM*224
69Ø IFT<>6 THEN 73Ø      :REM*145
7ØØ A=Ø:S=1ØØ:YD=254:XD=Ø:C=Ø
                         :REM*142
71Ø X=INT(RND(Ø)*16Ø):Y=21Ø
                         :REM*222
72Ø :                    :REM*9
73Ø POKEFX+I,X:POKEFY+I,Y
                         :REM*169
74Ø POKEXFD+I,XD:POKEYFD+I,YD
                         :REM*34
75Ø POKEFW+I,XE:POKEFH+I,YE
                         :REM*88
76Ø POKEFS+I,S:POKEFA+I,A
                         :REM*43
77Ø POKEFF+I,F:POKEFP+I,P
                         :REM*34
78Ø POKE53287+I,C        :REM*25Ø
79Ø POKEFI+I,T:RETURN    :REM*88
8ØØ :                    :REM*89
81Ø REM SCR              :REM*118
82Ø POKE5328Ø,Ø:POKE53281,6
                         :REM*2Ø1
83Ø PRINT"{SHFT CLR}{COMD 2}":Y
    =22:GOSUB118Ø        :REM*9Ø
84Ø FOR X=1TO3:PRINT"{CTRL 9}"+
    SF$;:NEXTX:PRINTSF$+"{3 SPA
    CEs}{CRSR LF}{SHFT INST} ";
                         :REM*114
85Ø FOR D=1TO2Ø          :REM*233
86Ø X=INT(RND(Ø)*37):Y=INT(RND(
    Ø)*2)+21             :REM*69
87Ø GOSUB118Ø:PRINTTAB(X)"{CTRL
     9}{SHFT W}";:NEXTD:REM*152
88Ø FORP=1TO25:GOSUB 92Ø:NEXTP:
    RETURN               :REM*89
89Ø :                    :REM*183
9ØØ REM AQUA             :REM*41
91Ø P=INT(RND(Ø)*3Ø)+1   :REM*16Ø
92Ø X=PX(P):Y=PY(P):GOSUB 118Ø
                         :REM*89
93Ø IFP>16THEN1Ø8Ø       :REM*88
94Ø C$="{CTRL 6}":IFP>12THENC$=
    "{COMD 6}"           :REM*12Ø
95Ø PRINTC$:IFRND(Ø)>.5 THEN 1Ø
    ØØ                   :REM*228
96Ø PRINTTAB(X)" "       :REM*17Ø
97Ø PRINTTAB(X)"{CTRL 9}{SHFT L
    B.}/ {COMD *}{CRSR RT}{SHFT
     LB.}{3 SPACEs}{CTRL Ø}{SHF
    T LB.}"              :REM*189
98Ø PRINTTAB(X)"{SHFT LB.}{2 SP
    ACEs}{COMD *}{SHFT +}{CTRL
    Ø}{SHFT LB.}{2 CRSR RTs} "
                         :REM*182
99Ø GOTO1Ø3Ø             :REM*18
1ØØØ PRINTTAB(X)"{CTRL 9}{COMD
     *}"                 :REM*189
1Ø1Ø PRINTTAB(X)"{COMD *}{CTRL
     9}{2 SPACEs}{COMD *}{CRSR
     RT}{SHFT LB.}{CTRL 9}{2 SP
     ACEs}{COMD *}{CTRL Ø} "
                         :REM*144
1Ø2Ø PRINTTAB(X)" {2 CRSR RTs}{
     COMD *}{SHFT +}{CTRL Ø}{SH
     FT LB.}{2 CRSR RTs}{COMD *
     }"                  :REM*64
1Ø3Ø PRINTTAB(X)"{4 CRSR RTs}{S
     HFT +}"             :REM*176
1Ø4Ø PRINTTAB(X)"{4 CRSR RTs}{S
     HFT +}"             :REM*186
1Ø5Ø IFY>15THENRETURN    :REM*18
1Ø6Ø PRINTTAB(X)"{4 CRSR RTs}{S
     HFT +}";            :REM*159
1Ø7Ø RETURN              :REM*184
1Ø8Ø IFP>2ØTHEN113Ø      :REM*177
1Ø9Ø C$=CHR$(INT(RND(Ø)*7)+149)
                         :REM*159
11ØØ PRINTTAB(X)C$+"{COMD *}{CT
     RL 8}{SHFT Q}"+C$+"{SHFT L
     B.}"                :REM*173
111Ø PRINTTAB(X)"{CRSR RT}{CTRL
      6}{SHFT -}"        :REM*55
112Ø RETURN              :REM*234
113Ø X=INT(RND(Ø)*34):Y=INT(RND
     (Ø)*2):GOSUB118Ø    :REM*197
114Ø C$="{CTRL 7}":IFRND(Ø)>.5
     THEN C$="{CTRL 4}":REM*183
115Ø PRINTTAB(X)C$+"{CTRL Ø}{5
     COMD @s}"           :REM*75
116Ø RETURN              :REM*19
117Ø :                   :REM*2ØØ
118Ø PRINT"{HOME}";:IFY=ØTHENRE
     TURN                :REM*1Ø8
119Ø FORZ=1TOY:PRINT:NEXTZ
                         :REM*7Ø
12ØØ RETURN              :REM*59
121Ø :                   :REM*24Ø
122Ø DATA 782Ø3139AØØ7A9ØØ99ØØ
     4Ø996Ø4Ø881ØF7AE7138 DØØCA
     D14Ø38D7Ø38AD15     :REM*1Ø2
123Ø DATA Ø38D7138A92E8D14Ø3A9
     388D15Ø3586ØD8AØØ72Ø 8138B
     9184ØC9Ø12E744Ø     :REM*15Ø
124Ø DATA B92Ø4ØC9Ø12E754ØB95Ø
     4ØC9Ø12E764ØB9ØØ4ØC9 Ø12E7
     34Ø881ØDAAD744Ø     :REM*239
125Ø DATA 8D1DDØAD754Ø8D17DØAD
     764Ø8D1BDØAD734Ø8D15 DØ4CØ
     ØØØE7E9EBEDEEFØ     :REM*166
126Ø DATA F1Ø1Ø2Ø4Ø81Ø2Ø4Ø8ØBE
     ØØ4ØCA3ØA6A5A2394Ø4Ø C9Ø1B
     D723869ØØBE484Ø     :REM*154
127Ø DATA FØØ269ØC99F8Ø7B96Ø4Ø
     DØØDB9284ØC9FF79774Ø 99774
     Ø9Ø462ØFC3818B9      :REM*222
128Ø DATA 384Ø791Ø4ØC9Ø59Ø3999
     1Ø4Ø98ØAAAB91Ø4Ø9DØ1 DØ18B
     93Ø4Ø79Ø84ØC9B5      :REM*8Ø
129Ø DATA 9ØØ4C9BF9Ø1E99Ø84Ø98
     ØAAAB9Ø84ØØA9DØØDØB9 79384
     9FF2D1ØDØ9ØØ319     :REM*139
13ØØ DATA 79388D1ØDØ6ØA9ØØ99ØØ
     4Ø6ØBE6Ø4ØFØ2FE8B938 4Ø3ØØ
     2CACA8A996Ø4ØFØ     :REM*26
131Ø DATA 1ED9684Ø9Ø1CBE584ØA9
     ØØ9DØØ4Ø9D1Ø4Ø8AØAAA 9DØ1D
     Ø18B9384Ø49FF69      :REM*131
132Ø DATA Ø199384Ø6ØA9CØ85FCA9
     3985FDA9CØ85FEA93C85 FFA9Ø
     C85FBAØ3CB1FC2Ø      :REM*128
133Ø DATA 8239C8C891FE88B1FC2Ø
     823991FEC8B1FC2Ø8239 88889
     1FE8888881ØEØ18      :REM*62
134Ø DATA A5FC694Ø85FC9ØØ2E6FD
     18A5FE694Ø85FE9ØØ2E6 FFC6F
     BDØC46Ø85FAA2Ø8      :REM*21
135Ø DATA 46FA2A488A4A9ØØE6848
     29Ø3FØØ8C9Ø3FØØ46849 Ø3486 ►
```

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```
      8CADØE66ØØØØØØØ    :REM*215
136Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØ2Ø     :REM*195
137Ø DATA ØØØØ28ØØØØØ8ØØØØØ8ØØ
      ØØØ9ØØØØØ98ØØØ298ØAØ 299Ø2
      8199Ø2899982A99     :REM*128
138Ø DATA BA2A99992899A82829A8
      AØ29AØØØ298ØØØØA8ØØØ ØAØØØ
      ØØ8ØØØØ2ØØØØØ8Ø    :REM*15Ø
139Ø DATA ØØØØØ2ØØØØØ28ØØØØØ8
      ØØØØØ8ØØØØØ9ØØØØØ98Ø 8Ø298
      Ø2Ø299ØA8199ØA8     :REM*68
14ØØ DATA 9998AA99BAAA9999A899
      98A829A82Ø29AØ8Ø298Ø ØØØA8
      ØØØØAØØØØØ8ØØØØ    :REM*146
141Ø DATA 2ØØØØØ8ØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØ28ØØØØØAØØ    :REM*2Ø2
142Ø DATA 8Ø2AAØ2ØAAA82AAABA22
      AA588ØAA6ØØØ2A8ØØØØ2 ØØØØØ
      AØØØØØØØØØØØØØ     :REM*64
143Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØ28     :REM*179
144Ø DATA ØØ8ØØAØØ8Ø2AAØAØAAA8
      2AAABAA2AA588ØAAAØ8Ø 2A8ØØ
      ØØ2ØØØØØAØØØ,ØØ    :REM*224
145Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØØØ    :REM*229
146Ø DATA ØØØØØØØØØØØAAØ2Ø2AA
      8B8AAAAA3AAABØØEAACØ 2BFFE
      Ø2ØØØAØAØØØ28ØØ     :REM*228
147Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØØ     :REM*2Ø1
148Ø DATA ØØØØØØØØØØØØØØØØØØ
      AAØ2Ø2AA8BØAAAAABAAA BØØEA
      AEØØBFFE828ØØØ8     :REM*11Ø
149Ø DATA 2ØØØØAØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      AØØØØØAØØØØØA8Ø    :REM*234
15ØØ DATA ØØØA6ØØØØAAAØØØAA8ØØ
      ØAØØØØØA8ØØØ2A8ØØØ2A AØØØ2
      AAØØØ2AAØØØ2A8Ø    :REM*114
151Ø DATA ØØ2AØØØØ2AØØØØ28ØØØØ
      282ØØØ28Ø8ØØØ8Ø8ØØØA 28ØØØ
      2AØØØFFØØØ8Ø1AØ    :REM*134
152Ø DATA 22Ø7Ø88Ø89Ø2ØØ2ØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØ      :REM*15
153Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØE9    :REM*129
154Ø DATA ØØØØ2ØØ28Ø89Ø822Ø7AØ
      Ø8Ø1ØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØØ     :REM*227
155Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØØ     :REM*153
156Ø DATA ØØØØØØE928ØØØØ82ØØØØ
      82ØØØØ82ØØØØ82ØØØØ28 ØØØØØ
      ØØAØØØØ2Ø8ØØØ2Ø     :REM*184
157Ø DATA 8ØØØ2Ø8ØØØ2Ø8ØØØØAØØ
      ØØØØØØØØØØØØØØØØØA ØØØØ2
      Ø8ØØØ2Ø8ØØØ2Ø8Ø     :REM*89
158Ø DATA ØØØAØØØØØØØØØØØAØAØ
      ØØ22A8AØ22ØA8ØØAØØØØ ØØØØØ
      ØØØØØØØØØØØØØ      :REM*156
159Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØØ     :REM*112
16ØØ DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØ2AØØØØA2 2ØØA8
      Ø8Ø28ØØØØ2ØØØØØ     :REM*22
161Ø DATA AØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØ      :REM*38
162Ø DATA ØØØØØØØØØØØØØØØØØØ
      ØØØØØØØØØØØØØØØØØØ ØØØØØ
      ØØØØØØØØØØØØØ      :REM*94
1631 DATA                 :REM*228
```

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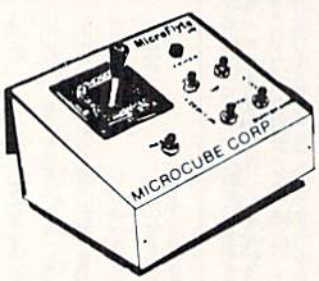


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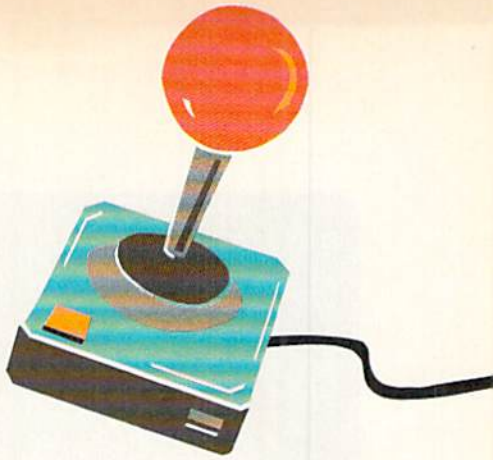
# GAMES GALLERY

*Vrooom! And you're off on the road to car and motorcycle racing fun and excitement!*

By LONNIE BROWN



RACING SIMULATIONS HAVE improved greatly since the early days of Commodore products. One need only run Motor Mania to see an example of a primitive race game. Copyrighted in 1982, that program gives an overhead view of a race-car sprite threading its way through Commodore graphic characters.

"Seemed pretty advanced at the time," said a friend of mine who recently booted up the game. Motor Mania, along with Richard Petty's Talladega and Shirley Muldowney's Top Fuel Challenge, comes packaged under the Cosmi title, Triple Crown Challenge.

The back of the box sports this comment about Talladega: "The only things missing here are the smell of gas and the feel of grit blowing in your face." Well, seven years ago when that quote was published in a review, yes. Today, the simplicity of these racing simulations will probably only appeal to new Commodore computer owners or to youngsters.

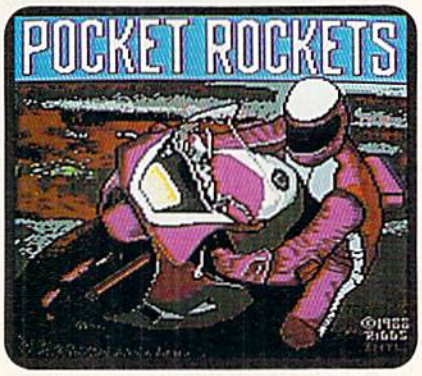
The *real* grit-in-your-face motoring action can be found in releases from the past year or so. You'll encounter varying degrees of realism, from carefree arcade fun to games so life-like that you'll want to make sure there's a spare tire in the trunk. Today's programs literally put you in the driver's seat, complete with rearview mirrors and radar detectors.

You can travel hundreds of miles, break several land-speed records and wreck thousands of dollars in expensive vehicles. All it takes is the right software and, in the case of crack-ups, some sloppy joystick work.

The packages are all relatively inexpensive; most cost less than a Ferrari hubcap or Honda handle grips.

## POCKET ROCKETS

Pocket Rockets is Capcom's motorcycle racing game. It pits one player against the stopwatch for a quarter-mile run or a lap around a serpentine track. You can hop aboard one of four motorcycles—Suzuki Katana, Kawasaki Ninja, Yamaha FZR or Honda Hurricane.




**Lean into those turns on one of four Pocket Rockets' motorcycles.**

Timing lights get you going. Hit the firebutton too soon, and you're flagged for a false start. Rev the engine too high before popping the clutch, and your on-screen persona falls on the asphalt as the raging cycle takes off. The program tracks and records your fastest time for the session.

I've been less than impressed with previous Capcom offerings, but Pocket Rockets is a definite improvement. I even found myself leaning into the turns while watching (the view is from behind the motorcycle) my on-screen driver race on the lap track.

## OUT RUN; ACTION FIGHTER

Sega's Out Run is pure driving fun. Converted from the arcade, this race-against-the-stopwatch game begins with a bird's-eye view of a map, which illustrates the way to five possible destinations across three intervening levels.

Quickness counts here, because if you reach the finish of one level before time runs out, the leftover is added to the next route.

The view is from behind the car, so you can not only watch the crashes, but also watch the passenger knock the driver over the head for running into a tree.

Two radio stations provide pace-setting tunes. Like the radio, the gear shift offers only two choices: the firebutton toggles between high and low.

The scenery changes from level to level. It whizzes by smoothly and provides enough variation so you don't feel as if you're running around in circles.

Out Run keeps track of high scores, but doesn't record them to disk, so each start is a fresh start.

**Sega's Action Fighter takes you on an arcade ride that tests your driving and shooting skills.**

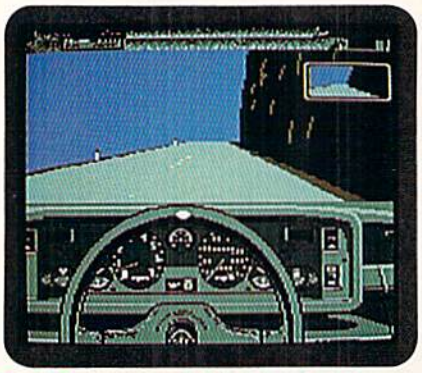
Action Fighter is another Sega arcade ride. An overhead view shows "the incredible, transformable combat vehicle." It starts out as a motorcycle, but if you drive well enough, it transforms into a sports car. The metamorphosis is complete when two turbojets turn the car into an airborne ranger.

Picking up capsules along the way advances you to higher levels. Every so often, an equipment truck pulls up, swallows the current vehicle and returns it, with additional firepower, to the streets.

Any similarity between Action Fighter and a driving simulation is purely coincidental. But the game does a good job of blending speed and arcade shoot-'em-up.

## TEST DRIVE; THE DUEL

Moving down the road to realism, Accolade's Test Drive and its sequel, The Duel, bring nearly everything but the new-car smell to the computer. These two products come very close to ►



Test Drive puts you behind the wheel of a Ferrari, Lamborghini, Lotus, Porsche or Corvette.

replacing Commodore's 8-bit chip with a V-8 engine!

The first complaint users had with Test Drive was that they could only drive one car at a time. That's why Accolade introduced Test Drive II: The Duel in which users could race a Ferrari F40 or a Porsche 959 against the clock or each other. So what have they found to complain about next? The fact that there are only *two* dream vehicles to race!

Accolade must have anticipated that one. The Supercars is an accessory disk that adds five high-powered hot rods to the master disk. And, for those drivers who think the scenery is beginning to get monotonous, you can try California Challenge.

Still complaining? The Muscle Cars should be available by the time you read this, as well as a second scenery disk called European Challenge.

Although the original disks are heavily copy protected, they include a feature that lets you make a play disk for your favorite cars and driving terrains, which considerably cuts down on disk swapping.

Improved road graphics and more responsive cars make Test Drive II: The Duel a worthwhile sequel to Test Drive.

Both Test Drives put you in the driver's seat, where you can look at the rearview mirror, gear shift, radar, steering wheel, instrument cluster, trip meter and clock. The joystick controls the gas pedal and brake, and the firebutton replaces the gearshift.

Here's an illustration of attention to programming details: On the European-made cars, the Test Drive speedometer measures in kilometers per hour.

Test Drive is a stickler for statistics, showing the best time, average speed and total points for each leg of the race, as well as overall performance.

Test Drive didn't need much refinement when it was introduced, and The Duel continues the tradition. The cars in the sequel do respond better, however, and there's the big advantage of extra car and scenery disks.

## Grand Prix Circuit

If the open road and oncoming traffic aren't ideal racing conditions for you, there's another game in our software garage: Grand Prix Circuit from Accolade. If, as the software lawyers say, it has the "look and feel" of Test Drive, that's because both were designed by the same company, Distinctive Software, Inc.

In Grand Prix Circuit, you must qualify for races in one of these countries.

Grand Prix Circuit has plenty of options—three cars (Ferrari, Williams and McLaren) with different racing characteristics and eight tracks on the racing circuit. With nine drivers, the roadway is more crowded than in Test Drive, but at least everyone's going in the same direction. The competitors have varying ability levels and different styles of racing (the latter being especially noticeable when your car approaches and attempts to pass).

Cars sustain damage, but going to the pits to change two or four tires reduces or eliminates that problem. After the race, which can be between one and 99 laps, a screen shows your ranking, overall stats and best lap.

## 4×4 Off-Road Racing

Let's assume you're the type who just can't seem to hold it in the road, no matter what you do. Maybe you should try a game designed with you in mind: Epyx' 4×4 Off-Road Racing.

Four-wheeling fanatics will find a feeling of fun and fascination with Epyx' 4 x 4 Off-Road Racing.

The "roadways" on the game's four circuits—the Georgia Mud Fest, the Michigan Winter Wreck-off, the Death Valley Trek and the Baja Challenge—cut through treacherous country. Each roadway is only slightly less grueling than the countryside it cuts through. You can easily see the road; it's the section of land covered with old tires, limbs, rocks and the skeletons of other drivers.

There are four four-wheelers from which to choose for running these gauntlets. Each has seven sets of characteristics, including gas mileage, ease of repair and payload. The Auto Mart offers a whole raft of goodies, including maps, oil, coolant, spare tires and a mechanic.

During the race, the dashboard at the bottom of the screen reports speed, rpms and the status of various engine components. If a part breaks, and you have the right tools (the six-pack from the Auto Mart is not one of them), you can fix it. If the right parts aren't aboard, the game has a Sledgehammer option for makeshift repairs.

### More to Come!

Still not raced out? Electronic Arts will be distributing a high-priced racing machine—the Ferrari F1/86—in its Ferrari Formula One game. No price had been announced at press time, although it's expected to be less than the

$350,000 window sticker of the F1/86.

Like other racing games, this one offers a driver's perspective of the road, along with 16 different tracks and seven opponents. Players modify their cars and test the performance in the Wind Tunnel or on the Dynometer.

The Amiga version of this game has been out for some time, but for the C-64, EA has some catching up to do. They're trying to offset their late entry by promoting Formula One's strategy aspects of engine repairs, critical pit-stop decisions, realistic car modeling and a complete racing season.

Accolade will be adding The Cycles, an international Grand Prix racing game that looks to be a two-wheel take-off on its Grand Prix Circuit disk.

Joining the ranks of computer motorcycle racing will be Data East's Super Hang On. Converted from the arcade, bikers will be able to rev it up to 160 mph while traversing different continents.

Well, there's the checkered flag. We've come to the finish line. You go over there to the winner's circle and tell them how you won the race.

Me? I'm going to Driver Improvement School. ■

*Lonnie Brown, computer columnist for* The Ledger *(Lakeland, Florida) and frequent contributor to* RUN, *won the 1988 Software Publisher's Association award for best reporting of computer news.*

**Table 1. Racing hints and tips.**

***Pocket Rockets***

—Watch the speedometer in the quarter-mile event to get an idea of when to shift. If your motorcycle isn't climbing steadily, or its climb is slowing noticeably, it's time for another gear.
—Watch the background—particularly the bridge—on the lap track. It gives you an idea of where you are and which direction the track turns.

***Out Run***

—Try running with the radio off. Listening to the engine is a quick way to tell which gear you should be in.
—Rather than pulling back on the joystick when entering turns, try dropping into low gear; you won't lose as much speed.

***Test Drive*; The Duel****

—Begin at a slow pace. Driving the roads at 25 or 30 miles per hour might not be what you came here for, but it's the best way to learn control of the car, note landmarks, spot curves in the road and practice passing. Use auto-shift until you've thoroughly mastered the throttle, speed and steering.
—Better stop for the police officer, unless you're on a fairly straight stretch of road and can drive like a demon. You won't outrun him unless you can go very, *very* fast.
—In two-player games, follow your opponent. Hang back, watch his mistakes and learn. Pass him only when you have a feel for the road.
—Stay as close as possible to the center line. You'll be able to move faster out into the left lane when oncoming traffic clears.
—Although there is some randomness involved, oncoming traffic usually has a pattern and likely appears on the same sections of road.
—An oncoming vehicle is seldom followed by another—at least on the lower levels. It's almost always a good time to pass after a car goes by.

***Grand Prix Circuit***

—Some Test Drive tips apply here. Start off slow with the Ferrari on practice laps.
—Use the rearview mirrors on either side of the car to find out where a competitor might pass. Edge to that side of the road to cut him off.
—Practice going into the turns fast, but find out where the last possible place is to hit the brakes. If you can hold off the brake pedal, you have a better chance of passing another driver. Auto races are won and lost in the turns—the race is not always to the swift, but the cagey.

***4×4 Off-Road Racing***

—Preparation is important. Time spent wisely in the Auto Mart can pay big dividends later.
—Watch the dashboard clock. The race begins at eight AM and lasts well into the afternoon.
—Speed isn't everything; extracting yourself from the mud bog is.

**Hints and tips for these games were provided by Emory Wong, programmer for Distinctive Software.*

**Table 2. Retail prices and manufacturers' addresses.**

*Triple Crown Challenge*
$24.95
Cosmi
415 N. Figueroa
Wilmington, CA 90744

*Pocket Rockets*
$29.95
Capcom
3303 Scott Blvd.
Santa Clara, CA 95054

*Out Run; Action Fighter*
$34.95; $24.95
Sega; distributed by Mindscape
3444 Dundee Rd.
Northbrook, IL 60062

*Test Drive; The Duel; Grand Prix Circuit*
$29.95 each
*The Supercars; California Challenge*
$14.95 each
Accolade
550 S. Winchester Blvd., Suite 200
San Jose, CA 95128

*4×4 Off-Road Racing*
$39.95
Epyx
600 Galveston Dr.
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| Poker Data Disk 3 | 12.97 |
| Superbase 64 | 25.97 |
| Superbase 128 | 31.97 |
| Superbase the Book | 13.97 |
| Superscript 64 | 22.95 |
| Superscript 128 | 25.97 |
| Thunderchopper | 18.97 |
| Twin Cities C-128 Compend.(Book) | 14.95 |
| Up Periscope | 18.97 |
| Vampire's Empire | 18.97 |
| Warlock | 19.97 |
| Wizardry/Sir Tech | 24.97 |
| Wizardry 2 | 24.97 |
| Wizardry III | 25.97 |
| WWF Superstars Data #1 | 13.97 |
| Zoom | 19.97 |

### ACCESSORIES

| | |
|---|---|
| 1541/71 Serial Cable | 5.95 |
| 1541/71 Power Cable | 5.95 |
| C-128 RGB Monitor Cable (Monochrome) | 6.95 |
| C-64 Color Monitor Cord | 5.95 |
| Commodore 64 H/D Power Supply | 34.95 |
| Commodore 128 Power Supply | 49.95 |
| RS-232 Interface (Supra) | 27.95 |
| MW 350 Printer Interface | 49.95 |
| Aprospand 64 | 27.95 |
| Aprospand Extender Cable | 15.95 |
| Aprotek 1200 Baud Minimodem C | 59.95 |
| Aprotek User Port Extender Cable | 15.97 |
| Commodore 1670 Modem (1200 Baud) | 69.95 |
| Commodore 1764 Ram Expander | 129.95 |
| Commodore 1351 Mouse | 37.95 |
| Mouse Holder | 5.95 |
| Mouse Mat | 8.95 |
| Numeric Key Pad C-64 | 49.95 |
| Slimline C-64 Replacement Case | 19.97 |
| Computer Hand II | 6.95 |
| Disk Mailer | 49 |
| 1541 Dust Cover | 8.95 |
| 1541 II Dust Cover | 8.95 |
| 1571 Dust Cover | 8.95 |
| C-64 Dust Cover | 8.95 |
| C-64C Dust Cover | 8.95 |
| C-128 Dust Cover | 8.95 |
| C-128-D Dust Cover | 13.95 |
| Disk Notcher-Square Cut | 4.95 |
| 5.25" Disk Drive Cleaner | 5.95 |
| 10 Cnt Disk Storage | 1.95 |
| 50 Cnt Disk Storage | 8.95 |
| 100 Cnt Disk Storage w/Lock | 12.95 |
| 80 Cnt 3.5" Disk Stor. w/Lock | 9.95 |
| 5.25" Disk Labels-96 cnt | 1.00 |
| 5.25" DS/DD Diskettes-Black | .39 |
| 5.25" DS/DD Diskettes-10 colors | each .79 |
| Write Protects-100 cnt Black | 1.00 |
| Tyvek Sleeves-High Quality | ea .09 |
| Slik Stik-Joystick | 6.95 |
| Tac 2-Joystick | 10.95 |
| Tac 3-Joystick | 11.95 |
| Touch-It Static Strip | 8.95 |
| Suncom Icon Troller | 17.95 |
| Surge Protector/Power Pad | 39.95 |

# THE RAMBOard

*Beyond Super*

RAMBOard does just what the other copy card on the market does: it adds RAM to your 1541 disk drive. This RAM is used to create a workspace where custom software can work its magic. Copy protection is evolving past the point of nibblers and other software-only solutions. Believe us, card based copiers are the future of archival technology.

So how do you decide between our card and "Brand X"? Don't compare the similarities - compare the differences. Their card is just "out there". You buy it, and that's pretty much it. RAMBOard was designed from the very beginning as an integral component in Maverick™, a complete system of archival tools and products. Their card puts the burden of the work on you. Are you good at soldering? You better be - their card REQUIRES it. On the other hand RAMBOards require NO soldering to install, the only exception being a handful of older 1541C's. That's not all - the other guys say they don't use parameters, but what they really mean is they don't WRITE parameters. The user is required to make special critical "copy adjustments" to copy software. Sounds like creating parameters to us. On the other hand, RAMBOard uses Maverick parameters, designed by experts to instantly and easily copy today's toughest titles. So when the other guys say that their card will copy "everything", that may be true - providing that you can figure out the proper "copy adjustment" settings for everything. Good luck!

The differences go beyond the product itself. Software Support International is the company that began with the award winning Kracker Jax series of archival parameters. Our customer support system has earned industry praise, and we've established a reputation for honesty and integrity. A close look at the track record of the other guys will show just how deep our differences run. So when you're ready to get involved with the future of archival technology, pick RAMBOard - a product you can trust, from a company you can trust.

**The RAMBOard**
**1541/1541C Version: $34.95**

NEW **1541 II Version: $44.95**
**1571 Version: $49.95**

The RAMBOard is an optional Maverick accessory

# THE 1581 TOOLKIT V2

ALL NEW ALL NEW

*If You've Been Waiting For A Sign, This Is It.*

Introducing the 1581 Toolkit Version 2, the newest incarnation of the best program you can buy for your 1581 disk drive. How good is it? Well, V1 received 4 1/2 of a possible 5 stars from INFO™ magazine - and V2 is even better. What can it do for you? Picture using your 1581 with a:

- ★ **Fast Disk Copier**
- ★ **Fast File Copier**
- ★ **Byte Pattern Search**
- ★ **Partition Creator**
- ★ **Ultrafast Formatter**
- ★ **Track & Sector Editor**
- ★ **Directory Editor**
- ★ **Error Scanner**
- ★ **Relocatable Fast Loader**
- ★ **File Track & Sector Tracer**

And V2 adds many new or enhanced features, like the fact that both our single drive fast data copier and fast file copier now support the 1764/1750 RAM expansion units for super-fast one pass copies, or like our 64k video RAM support for 128 owners! And remember also that all of our 1581 Toolkit utilities use hyperfast read/write routines and, wherever appropriate, allow full access to partitions.

So whether you're thinking about buying a 1581 drive or you already own a 1581 drive, we guarantee you'll never really USE a 1581 drive until you've got your hands on the 1581 Toolkit.

**NEW LOW PRICE:**
**THE 1581 TOOLKIT (3.5 disk) . . . . . NOW ONLY $24.95!**
**VERSION 1 OWNERS: Upgrade to V2 by Sending us your Original Toolkit V1 disk along with $9.95 plus S/H**

Ever wish you knew more about your 1581? David Martin's book, "The 1581 DOS Reference Guide", is what you've been wishing for. Martin's invaluable resource holds over 100 pages of detailed information that took over a year of solid research to compile. This exhaustive manual will show you the inner workings of the 1581 as nothing else can. Order now, and we'll include some additional utilities like a machine language monitor with DriveMon - the perfect companion to The 1581 DOS Reference Guide!

**THE 1581 DOS REFERENCE GUIDE / $14.95**
**SPECIAL OFFER: GET BOTH THE 1581 REFERENCE GUIDE AND THE 1581 TOOLKIT FOR ONLY $34.95**

# Super Snapshot V4

*When The Going Gets Tough, The Tough Get Enhanced*

A lot of people are probably telling you to get rid of your Commodore. They say that the 8-bit machines just aren't good enough anymore. Bull biscuits. You don't need a new machine - you just need some new capabilities. Imagine having a powerful set of advanced utilities actually built right into your Commodore's operating system, available from the instant you power up. That's what having a Super Snapshot cartridge is like.

The fact is, the cartridge just has too many features to go into detail here, but picture how you'd feel about your computer if, at the touch of a button, you could:

- ★ **Load programs up to 15 times faster!**
- ★ **Send Screen Dumps to your printer or Disk Drive.**
- ★ **Archive many programs into an unprotected format.**
- ★ **Examine and manipulate running programs.**

Even the IBM™ and the Mac™ can't do what a Commodore can when it's enhanced with the Super Snapshot cartridge. Don't sell your system short - our multi-function cartridge will transform your Commodore into a machine you can be proud of. The Commodore computer and Super Snapshot V4 the power team for power users!

**Super Snapshot v4 - Only $64.95**

ATTENTION 128 OWNERS: C-64 Disable Switch available. Allows you to boot C-128 software WITHOUT removing your Super Snapshot cartridge! Add $8.00. PAL VERSION AVAILABLE: Add $4.00 more per unit for shipping.

## Also Available: THE SLIDESHOW CREATOR

Now you can create dazzling slideshows from eye-catching screens that you've captured with Super Snapshot! Ottions include fade in/fade out, shutter on/off, pop on/off, slide on/off. Use any of 10 different fonts to display your personalized, scrolling messages!

**Super Snapshot Slideshow Creator - Only $14.95**

# THE 1750 CLONE

*Thanks For The Memory*

Most Commodore users are content to use their computers within the constraints placed on them by a limited amount of RAM. But some people want more. More speed. More power. And that means just one thing - more memory.

Power users have long known that the ideal solution to their memory problems is out there in the form of Commodore's incredible 1750 RAM expansion module. Just plug it in and you've got a whopping 512k of onboard RAM - the same amount of memory found on most IBM computers! This is the memory cartridge that all serious Commodore power users want. There's only one problem.

You can't find them.

That's right. These RAM units are almost impossible to buy. We've always specialized in finding solutions to Commodore related problems - here's what we came up with.

First, we bought brand new Commodore 1764 RAM expansion units, the ones with only 256k of RAM onboard. Next, we had Chip Level Design engineer and produce a custom upgrade that takes a 1764 to a full 512k! That's the same half meg of RAM as a regular 1750! Finally, we tested each and every cartridge, and warranteed them to be free from defects.

Now there's nothing to stop you from taking your Commodore 64 or 128 to levels of power and sophistication that the original designers never even dreamed of! If you're using programs like GEOS from Berkeley; the Pocket Series from Digital Soutions; future versions of Maverick from Kracker Jax; Fleet System IV from Professional Software; or the potent PaperClip III from Batteries Included; if you're using ANY of these programs, you won't believe the difference that the extra memory makes!

***IMPORTANT NOTES - READ CAREFULLY***

*C-64/64c (but NOT C-128/128D) owners MUST buy a heavy-duty power supply to use these units. The power supply is NOT included - it is available from us seperately.

* If you ALREADY own a 1764 RAM cartridge, we can upgrade it for you. Your unit MUST be in perfect working order for us to upgrade it. The turnaround time on upgrades is approx. 2 weeks. It will NOT be necessary for you to purchase a new power supply - the one that came with your 1764 will still work fine.

**THE 1750 CLONE**
**ONLY $199.95**
**1764 UPGRADE**
**ONLY $124.95**

## ATTENTION C-128 OWNERS

**Solderless 64K Video RAM Upgrade**

Now that Commodore has released the C-128D with 64K of video RAM, we should be seeing 128 programs address this fantastic new feature soon.

**BASIC 8** already has the capability of using all 64K of video RAM. If you own the C-128 in stock condition, you own all 16K of video RAM that Commodore felt was necessary. Using Basic 8 format and the full 64K of video RAM provides you with the ability to scroll through video memory as well as enhanced color resolution.

Up until now, to upgrade the C-128 to 64K of video RAM you would have to first search out the components, then find a competent repair outlet to desolder and install the parts. **What a hassle!**

**SOLUTION** — We have developed a module that simply plugs in to the mother board of your C-128. **No splattered solder — No heat damage — No hassle.**

Includes easy to follow installation instructions, a test program to verify proper installation, and the plug in 64K Video RAM Upgrade.

**RAM UPGRADE**
**Only . . $49.95**

# KRACKER JAX VOLUMES 1-7

NEW LOW PRICE

*We Just Made A Good Thing Better - Without Lifting A Finger.*

Kracker Jax, our ground breaking series of copy parameters, was always a superior product. When we made it, we made it right. So how can we improve it now? Easy. We slashed the price!

Each Volume of Kracker Jax allows you to make Unprotected versions of around 100 specific popular titles. No special knowledge or tools are required. Each Volume originally sold for $19.95. So if you wanted all 7 Volumes, it would have cost you $139.65. But now, you can buy each Volume for only $9.95 or, for you bargain hunters, you can buy **ALL 7 VOLUMES FOR ONLY $29.95!** That works out to a cost of only **$4.28** each!

We've also cut the price on The Shotgun II, one of the most powerful nibblers ever produced. Originally $14.95, you can now own it for only **$9.95!**

And just because there's a remote chance that it might be your birthday, we'll go one step further: Buy the Kracker Jax Volume 1 -7 package for **$29.95,** and we'll throw in The Shotgun II nibbler **FREE!** Quite a deal, huh? But if you want it, better hurry - supplies are limited. After all, nothing good lasts forever.

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Circle 17 on Reader Service card.

**PLEASE READ BEFORE ORDERING:** We accept money orders, certified checks, VISA, M.C. and, Discover. Previous Software Support customers may use C.O.D. and personal checks. Orders shipped to U.S.A. (48 states). F.P.O., A.P.O., or possessions, please add $3.50 per order for S & H. U.S. shipping is by UPS ground in most cases. FAST 2nd DAY AIR available: add $1.00 per pound additional (U.S. 48 states only). Alaska or Hawaii (all orders shipped 2nd day air), please add $7.50 per order for S & H. C.O.D. available to U.S. customers only (50 states): add $2.75 along with your S & H charges per order. Canadian customers may calculate the S & H charges by including $4.00 (minimum charge) for the first two pieces of SOFTWARE and $1.00 for each additional piece per shipment. All monies must be submitted in U.S. funds. Canadians must call or write for hardware shipping charges. Foreign customers must call or write for shipping charges. Defective items are replaced at no charge if sent postpaid. All in stock orders are processed within 24 hours. U.S. SOFTWARE orders over $100 will be shipped 2nd Day Air at our regular $3.50 S & H charge (48 states only). Washington residents please add 7.6% additional for Sales Tax. All prices subject to change. All sales are final unless authorized by management.

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**DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!**

# COMMODORE CLINIC

*Making color printouts from RUN Paint; finding longer RUN programs for downloading; and switching commercial programs to 3½-inch format.*

By LOU WALLACE

**Q** *I'm currently writing a program and need help to solve a thorny problem with Basic. In this program, I'm trying to send data to the printer. The problem is that if the printer is not on, or is offline, then the program stops with a Device Not Present Error when data is sent. Is there any way for the program to check for the presence of a printer before sending any data?*

—JIM HUTTO
SHREVEPORT, LA

**A** You can have Basic check for any and all devices daisychained on the serial port with just a few lines of Basic code. The secret is to open a channel to the device with any secondary address, then close it and check the status variable, (ST). If the variable is a negative number, then the device is not available. Here's an example.

```
10 OPEN 4,4,7
20 CLOSE 4
30 S=ST
40 IF S<0 THEN PRINT "PRINTER
   NOT AVAILABLE":GOTO 60
50 PRINT "PRINTER ONLINE!"
60 END
```

This will work with disk drives as well as printers, so you could check for the presence of extra drives if you need them. One thing that might cause problems is the printer interface in use. Some printer interfaces may not return the proper status value if the printer is unavailable.

**Q** *I purchased the RUN Works applications disk, and so far I'm very happy with it, except for one thing. RUN Paint doesn't support a color printer like the Okimate 20; instead it has only black-and-white printer support. Are there any printer drivers that will print RUN Paint screens on my Okimate 20?*

—STEVE BAKER
LOUISVILLE, KY

**A** I don't know of any, but if you need to print screens in color, there is a solution. RUN Paint saves its screens in either Doodle! (for High Resolution mode) or Koala (for multicolor Medium Resolution mode) formats. If you have a program for your Okimate 20 color printer that supports these formats (and they are the most popular picture formats for the C-64), then just load your RUN Paint pictures into that program and print them there.

**Q** *I'm having a problem with the character colors on my C-64. Every character comes up in a different color, on both a television and my 1702 screen. Any ideas as to what I can do about it?*

—TONY MACK
KALAMAZOO, MI

**A** It sounds as though you have a bad VIC-II graphic chip. Take the computer to an authorized Commodore service center and have them check it out. If the VIC-II is the source of the problem, it can be solved in minutes by just replacing the chip.

**Q** *Are the programs listed in* RUN *available for downloading from your bulletin board system? It would save me a lot of typing if they were, especially with programs like RUN Paint!*

—CHRISTOPHER BOGS
FLAGSTAFF, AZ

**A** No. All the programs available for downloading on the BBS are in the public domain. However, our listings are for sale on our ReRUN disks. We also maintain a special library of *RUN* programs on QuantumLink in the *RUN* area. Many can be downloaded free of charge (plus Plus Time). Some of the bigger programs like RUN Paint are in the *RUN* Online Library (the Surcharge Library) where they can be downloaded for only $1.50 extra. Considering the time it takes to type in RUN Paint and all the graphic power it offers, that's got to be the bargain of the year!

**Q** *Since 3½-inch disks are more convenient (they are faster and hold a great deal more data), I want to switch all my unprotected commercial programs to that format. How can I tell which disks are protected before I try to copy them?*

—S. LAWSON
LAGUNA NIGUEL, CA

**A** If the software's documentation states that you can make copies, then the program is probably unprotected. If it has custom fast-loaders, makes the drive heads bang or make other noises, then it may well be a copy-protected disk.

The best test, of course, is just to copy the files from the disk onto the 1581 drive. Since you can't simply use a disk-copy program because of the differences between the disk formats, use a file-copy utility to copy all the files on the source 5¼-inch disk to the 3½-inch format; then run the program. If it works, great; but sometimes even unprotected software won't work on the 1581. This is because it's expecting the directory tracks to be at track and sector 18,0, whereas these are at 40,0 on the 1581.

**Q** *Is it possible to operate a 9600-baud modem on a C-64 or C-128, and if so, is there software available for this?*

—JOHN TRAN
BROOKLYN, NY

**A** Neither computer is capable of handling telecommunication speeds that high. I've seen the C-128 (in 80-Column Fast mode) work at 2400-baud, and the results were quite acceptable. My best bet is that 2400-baud is the fastest speed you're going to get and still be accurate. ■

*Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.*

ALL NEW

# MAVERICK ™ v3

## *Why Is This Program America's Favorite Disk Utility System?*

All over the country, packs of imitators are running themselves ragged trying to answer that question. They want to know why we're so popular. They want to know what makes Maverick so special. Well, guess what - we're going to tell them.

Maverick is the physical embodiment of a philosphy that has always been the foundation that Kracker Jax products are built on: Work as hard as you can to create the very best product you can. And then improve it. Such is the case with the new Maverick v3.

Maverick is already the most powerful archival system money can buy. So how do you improve on that? By adding exclusive new features like these:

- A new RAM Expansion Unit support module that allows REU owners to enjoy lightning fast response with Maverick's Quick File Copier & Fast Single Data Copier utilities - no more disk swaps!
- 64k video ram support for 128D's or C128's with 64k of video RAM. This provides a memory buffer for enhanced copying capabilities.
- Have you ever lost valuable data to a fatal error on Track 18? Ever done a short "NEW" and then wished you hadn't? Our new Automatic Directory Recovery Utility recreates Track 18 on 1541 formatted disks to recover your files! This does hours of intense, critical recovery work for you *automatically!* Similar to an item on INFO Magazine's March 1989 "Wish List" of dream utilities they'd like to see!
- An all new Advanced Sector Editor with 100% ML coding for blazing speed and superior performance! Full featured - allows editing in ASCII, HEX, and even disassembly modes! Even includes comprehensive on-line help screens!
- And for GEOS™ 2.0 owners with 1581 drives: Maverick v3's GEOS Toolkit has a new utility that allows you to transfer the incredible GEOS v2.0 over to your high speed, high capacity 1581 drive! This transfers *everything* - which means you can run the 64 or the 128 version from the 1581 alone, WITHOUT using the 5 1/4" disks at all! And the 800K 1581 disk leaves you plenty of room to transfer all your GEOS applications over to the same disk! This is a MUST FOR SERIOUS GEOS users who want to unleash the true power of Berkeley Softworks revolutionary operating environment.
- MORE PARAMETERS! Maverick v3 now boasts over 400 parameters that either copy or entirely "break" the potentially destructive protection schemes of some of the world's finest software. Current Maverick owners know how dynamic our parameters have been, but even they will be amazed by the enhancements and additions we've made, including new parameters and special RAMBOard support capabilities exclusive to Maverick v3!
- Enhanced RAMBOard™ Support: Beginning with parameter Module #3, we gave you the ability to copy the Pocket 2.0 series of productivity software. Then Module #4 gave you parameters for 6 V-Max!™ protected titles - parameters that left the competition stunned, because OUR parameters did NOT require physical drive speed modifictions to work. Now Module #5, included with Maverick v3, will forever separate us from the imitators trying in vain to keep up with us. There are over TWENTY new RAMBOard support parameters that are without equal, plus a large number of special parameters that don't require the use of RAMBOard at all! And our new V-MAX! parameters utilize proprietary read/write verification routines that not only eliminate the need to alter drive speeds, but also save you from having to "copy till it boots", a sure sign of an inferior product.

All of these new features are in addition to the amazing array of utilities that have always been found in Maverick. If there's a better value on the market today, we'd like to see it.

One more thing: the next time you think about buying a program, remember that you're also buying a bit of the company that *makes* that program. Will they be there for you in the future? You *know* we will. Because you've made us the most successful Commodore mail order house in the country. ***See our review in INFO's July/Aug '89 Issue!**

## The New MAVERICK v3.0 - Only $34.95

### NOW INCLUDES PARAMETER MODULES 1, 2, 3, 4, AND 5

**Maverick v3 (Formerly Renegade) is available from Software Support International. Products that work - from a company that cares**

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- 1541/1571/1581 fast file copier - any direction
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- GEOS™ file copier - works under desktop
- GEOS™ sector editor - works under desktop
- Error scanner with unique sector editor
- Single of dual drive high speed data copier
- Directory editor helps you organize your disks
- Scrolling M/L monitor with Drive Mon
- Byte pattern scanner for high speed searches
- Works with C-64/C-128 & 1541/1571/1581 drives
- Extensive 40 page documentation included
- EXCLUSIVE Popular subscriber service available
- Technical support from our staff experts.

**Attention: Registered Maverick owners!**

**Maverick V3.0 Upgrade is now available**

**Only $9.95**

**Parameter Module #6 is also available**
**Includes #2, 3, 4, & 5**

**Only $9.95**

# WELCOME TO HACK U

HACK U

*A School Of Higher Learning For A Select Few.*

Welcome. This is a different kind of school. Here, we will teach you about power. The power of knowledge. The power of mastering a very specialized discipline. And the power of the Commodore 64/128.

Not everyone can qualify to enter Hack U. You've got to be self-motivated - we're certainly not going to come to your house and hold your hand. You've got to be driven - mastering the Commodore can be a long journey, and is not recommended for the faint of spirit. And you've got to be intelligent - but your intellect must be tempered with equal doses of creativity and patience.

Think you qualify? Good. Not many do. But there is one more thing you need to bring with you. Curiosity. Overwhelming, insatiable curiosity. Because that's the fuel we'll use to power you on this journey.

If you're among the few to still be with us, congratulations. This is where your journey begins. The combined experiences of those who came before you are here, available for you to use whenever you're ready. All it takes is making the first step.

NEW

### ★ THE CSM NEWSLETTER COMPENDIUM / $29.95

From 1984 to 1986, the Golden Years of Commodore hacking, the CSM Newsletters were THE best source of inside information on the complex world of copy protection. This compendium provides you with the very best tips, tricks, hardware modifications and expert copy protection cracking techniques! If you're hungry for knowledge, this is a great source, and highly recomended by the Kracker Jax team.

### ★ THE CSM PROGRAM PROTECTION MANUAL VOL I / $24.95

The CSM books are the logical starting place to begin your higher education in copy protection. CSM, the original central clearing house of specialized info for hackers, put their best knowledge into these two books. Volume I provides an overview of copy protection issues and provides you with a foundation of information to begin building on.

### ★ THE CSM PROGRAM PROTECTION MANUAL VOL II / $29.95

Volume II begins where Volume I left off. It covers the evolution of copy protection schemes; autoboots; interrupts & resets; compilers; undocumented opcodes; encrypted programs; machine language; GCR data recording & reading; custom DOS routines like half-tracks, extras sectors, & modified formats; decryption & decoding techniques, and much more! This is a MUST READ for all serious Commodore users.

### ★ KRACKER JAX REVEALED: VOLUMES I, II, & III / $23.50 Per Volume

No serious hacker can be unfamiliar with the Kracker Jax name. The experts who created the award winning series of deprotection parameters were brought together to create a graduate course of inside information for the truly serious student of hacking. This is not an easy course - we strongly recommend that you don't even try the Revealed books until you study (or have experience equivalent to) the information in the CSM materials described above. But once you're ready, you'll find the Kracker Jax Revealed books to be the final step on the path to copy protection mastery.

### KRACKER JAX REVEALED Book I

Uses 20 specific tutorials to introduce you to the unique concepts used by the Kracker Jax team. Includes a ML monitor, sector editor, error scanner, reset switch, & more.

### KRACKER JAX REVEALED Book II

Gives you 20 more examples, and also reveals the secrets of the famous Rapidlok™ copy protection system! Includes the legendary HesMon™ machine language monitor cartridge at NO ADDITIONAL CHARGE!

### KRACKER JAX REVEALED Book III

Is the final book in the Revealed series. Here, the student becomes the master as we show you how to create your own copy protection schemes, including one that can NOT be copied by any nibbler currently on the market! This book takes you deep inside the 1541 itself, where the new breed of ultra tough protection lives. Order now & get our famous $19.95 Hacker's Utility Kit software package FREE!

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# GEOWATCH

*Benefit from this GEOS user's experience and design your own fantastic fonts with geoFont.*

By STEVE VANDER ARK

A FEW YEARS AGO, while setting out to transform my ordinary C-64 character set into a visual feast, I eagerly typed in a font editor that I had found in a computer magazine. After several attempts, with mixed results, I realized that font design is more than just randomly adding serifs. Individually, each letter that I designed looked great, but when used with the others, my creations were a jumble.

So, my interest waned—that is, until the advent of GEOS. Suddenly, fonts leaped off the screen and poured out of my printer in styles and variations I would never have imagined. I discovered the joy of word processing with professional-looking output, and my interest in font design was quickly rekindled. GEOS uses real fonts, proportionally spaced and detailed in all point sizes.

Wanting to invent my own, I picked up a copy of FontPack Plus, which includes the editor, geoFont, and 53 exciting fonts. But with all those, as well as some 20 on *RUN*'s GEOS Power Pak, what more was there to create? Surely I had more fonts than I could possibly use—picture fonts like Ashbury, body fonts like Wheeler and Haste, display fonts like The Vatican, Fog and America, and unexpected designs like Braille and Spook!

I decided to design my own alphabet. Unfortunately, the results were quite a hodgepodge once again, with lots of shapes and flourishes that didn't seem to gel into a cohesive whole. Before I let frustration ruin my grand ideas, I resolved to learn more about what I was trying to do. I found an excellent book on computer fonts and graphics—*Desktop Publishing Text and Graphics*, by Deke McClelland and Craig Danuloff.

This book contains an abundance of fonts and typefaces, along with examples of the various styles that can be created by software or that exist as separate fonts. The more unusual variations, such as screened, skewed, rotated and reflected, gave me ideas for editing existing fonts. The information on design and layout taught me a lot about how a workable font is put together. Using this newfound knowledge, I created a few nice-looking fonts that finally seemed to work the way I wanted. I hope this column will enlighten other frustrated font designers.

## Term Talk

Fonts are measured in points, with one point on the printed page equal to $1/72$ of an inch. So, 12-point University, for example, stands $12/72$ ($1/6$) of an inch tall. But $1/6$ of an inch from where to where? The letter "f" is a lot taller than "o," and some letters have descenders, which add even more to the overall size. The rule is that a font's point size is measured from the bottom of its descenders to the top of its ascenders—from the bottom of a "q," for example, to the top of a "d." Two 12-point fonts might have different proportions and even appear to be of different sizes when printed out, but their top-to-bottom measurements will be the same—$1/6$ of an inch.

On a GEOS screen, one point translates into one pixel, which makes font editing fairly straightforward: If you want a 12-point font, your edit area will be 12 pixels tall. A character also has width, of course, which can vary enormously for a GEOS font between, let's say, a "w" and an "l." This proportional spacing is one of GEOS's strong points, resulting in professional-looking output.

However, the width of a letter or symbol must also include a bit of space to separate it from the character next to it. So, as you create your own fonts, you must add in this space, keeping in mind that various letters require different amounts. The computer automatically handles the vertical spacing, or leading, between lines, so there's no need to leave space at the top or bottom of your fonts.

## Setting the Stage

Before creating a new font, you must establish some guidelines for the design, some rules for spacing and proportion that you'll follow with each character. Uniformity is essential if you want your letters to look "right" when strung together in words.

First decide where to place the baseline. Each font has a baseline (established in geoFont with an arrow on the side of the edit window) upon which all the characters perch. You must be careful in placing the baseline, because you need enough room above it to create the bulk of each character and enough room below for the descenders. Another consideration is that the Underline function in GEOS applications draws *on* the baseline, so your characters must sit one pixel above it to avoid being partially overwritten.

When choosing your baseline, consider whether you want to create a tall font with small descenders, a more evenly spaced set, with a baseline just below the mid-point of the characters, or perhaps a bottom-heavy style, with negligible ascenders.

Next, you must make a few decisions about the style of your characters. Will they have serifs (caps on the tops and bottoms)? How rounded will your curves be? Will your "g" have a curved tail or a circle, or something in between? Sketch a few examples.

If you're copying a font you've found elsewhere, examine it closely. Now is the time to plan the details because you want consistency—every ascender the same, every rounded letter following the same curve and matching angles on the "A" and "v."

Finally, look at the number of pixels left between the baseline and the top of the font to decide the x-height, which is the height for the lowercase characters. In geoFont, there's no convenient indicator for this so-called waistline, so make a note of the lowercase letters' height (in pixels) above the baseline. For my own 12-point font, I placed the baseline three pixels from the bottom of geoFont's grid, with letters starting on the next pixel row up. Counting that point, I used an x-height of six. The ascenders and capital letters reach the

top of the grid. I leave a single pixel open on the left of each character and none on the right, which results in a one-pixel space between each letter.

### A Bare-Bones Editor

When you begin using geoFont to design characters, you'll find that the creator of this utility certainly didn't have convenience in mind. There's no facility for placing guidelines to help locate the waistline or spacings. The blank character set that appears at the start of geoFont consists of a set of thin lines. You must erase each line and resize the area before each letter or symbol can be drawn. In addition, the cursor sometimes sticks while drawing or erasing, which results in a smear of filled pixels across the screen.

Also unfortunate is the fact that there's no way to copy your pattern from one character to another—a technique that would allow for easy matching of curves, angles and entire letters. For example, "b" and "d" could be mirror images of each other if there were a horizontal mirror function, and "b" and "p" could be mirror images if vertical flipping were possible.

Despite these lacks, the editor does work; with a little time and effort, you'll have a brand new font. Remember that you'll also have to define all the punctuation symbols and numbers, as well as the space, which you can vary in size depending on the appearance you're seeking to achieve.

It would be unrealistic to expect that all your design work would mesh perfectly without a little tweak here and there. So, move your new font from the deskTop to where it's one of the first seven fonts on your geoWrite disk; then create a file called Test. Next, switch to your font, type a paragraph or two, and give it a long, hard look. If you like what you see, test it in boldface, italic and outline. (Do not, however, use these styles as a determining factor in any decisions regarding your font, because many perfectly respectable fonts can suffer drastically from these special effects. Some fonts adapt better than others to certain styles.)

Print out and examine what you've written. Are all your lowercase letters the same height? Is there an undesirable gap between a particular letter and its neighbor? Do the spaces, parentheses and brackets have enough room? If you find discrepancies, re-enter geoFont for touchups. Take your time and polish your font until you're satisfied.

### Fun with Spaces

By leaving one or more pixels open on the left side of each letter, there's a space between the printed characters. However, some letters look better when you *don't* leave a space. For example, the uppercase "A" has an angled design that gives the illusion of space between it and its neighbors. The same is true for "V" and "W". On the other hand, the "l" and "i" can get a bit lost amid their huskier neighbors, so an extra space on the right might be in order. Again, let your examination of the printout be your guide.

It is possible to force the computer to give your font extra leading between lines. The trick is to leave one or more pixel rows open above the characters you create. To keep the result to a certain point size, you'll have to choose a larger size as far as the editor and geoWrite are concerned. For instance, I use this technique to create a 17-point ►

**Figure 1. Samples of fonts created by the author.**

Paris, 12-point

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
!"#$%&'()+-•*↑:;=,./[]=⟷?_"↓{}✓

Somerset, 10-point

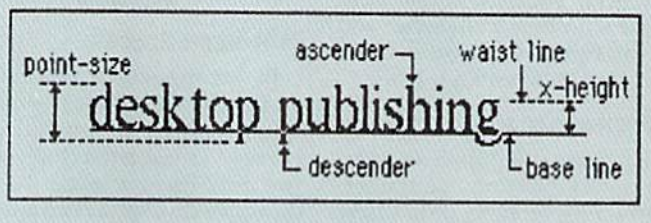
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
!"#$%&'()+-•*↑:;=,./[]=⟷?_"↑{}✓

Art Deco, 18-point

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
!"№$%&'()+-•*↑:;=,/[]=⟷?_"↓{}✓

font that I call Art Deco, which is, as far as GEOS knows, an 18-point font. The extra space between lines gives it the airy grace I was looking for in this thin, slightly geometric style. Art Deco also has a two-pixel gap between letters, which isn't excessive for an 18-point font and keeps it from appearing too tight. This example gives you an idea of how little touches, arrived at by editing and re-editing, make for a cohesive and expressive typeface.

**Figure 2. Terms used in the font design process.**




## Other Ideas

If you feel apprehensive about creating an entire font from scratch, but still want to have the fun of seeing your creation on-screen or in documents, try editing a *copy* of a font you already have. This can be as simple as reworking the serif to make Wheeler more flowery, or as extensive as adding shadow lines around the right edges of Boalt. Once you've created your own version, use the file menu on the geoFont screen to change its ID number, and rename the font when you're back on the deskTop.

A large number of the FontPack Plus fonts need some editing to get them into usable condition. Wheeler, for instance, is flawed in two common ways: Its number "1" is too wide, and the top line of pixels has been chopped off on some characters.

While you're making repairs, you might want to add your own designs to a font. There are a few characters—such as the accent mark or the reverse slash—that you'll seldom use in GEOS. These might be redefined into more usable patterns, like a check mark or bullet.

An upgraded version of a font can retain the same ID, because you'll probably never use the old one again. It should, however, be marked in a way that will indicate it as the newer version. To rename a reworked font, I add a "+" to its name.

## Font Management

The more fonts you collect, the more difficult it is to keep them straight, and the more housekeeping you must do to keep them accessible. While you might own many fonts, only a few will actually be used for most projects. In fact, it's relatively easy to choose, and to keep on your geoWrite work disks, eight or nine fonts that will look well in a large body of text. You might find the field a bit more difficult to narrow down for geoPaint or geoPublish, because each project will require different font styles. You can usually keep a few general-purpose fonts on your work disks all the time and load display fonts as needed for the situation.

Perhaps the best way to effectively use your collection is to take the time to familiarize yourself with the look of each font so you can choose intelligently when you're planning a project. Once you've got 100 or so fonts to choose from, it would be a shame if you didn't use the right design to get your message across with pizzazz!

Fonts are one of GEOS's strengths. Make them work for you! ■

*Steve Vander Ark is a college student working toward a degree in elementary education. He uses GEOS 64 for writing and desktop publishing.*

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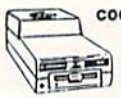

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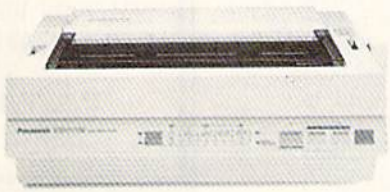

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- You get an Out of Data in Line xxx message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the line that reads the data, usually a For . . . Next loop. Make sure you have the proper values for the loop, because if the listing has a loop of 0 to 150 and you've typed 0 to 160, you'll get the "Out of Data" message. If the loop is correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. More likely, you may have skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing.

- You get an Illegal Quantity Error in Line xxx. That means that you've read a number from a Data statement and tried to Poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. Just look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).
- You get a Syntax Error in Line xxx. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.
- You get an Error in Data message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if all the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully, correct the mistake(s), save the new version and try again.

Finally, we urge everyone who intends to type in one of our listings to use *RUN*'s Checksum program, which is printed in each issue. This nifty little program will help you avoid every mistake we mentioned above, except that it won't detect the omission of a line. ■

—LOU WALLACE

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# *RUN*'s Checksum

TYPE IN *RUN*'s CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN*'s Checksum. The screen will display a SYS number that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

With this new version, when you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line is correct. If the number that appears *doesn't* match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program.

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACEs}—press the space bar 22 times

{SHIFT CLR}—hold down the shift key and press the clr-home key

{2 CRSR DNs}—press the cursor-down key twice

{CTRL 1}—hold down the control key and press the 1 key

{COMD T}—hold down the Commodore logo key and press the T key

{FUNCT 1}—press the F1 key

{5 LB.s}—press the British pound key (*not* #) five times R

**Listing 1. *RUN*'s Checksum program. This program is available on *RUN*'s BBS for users to download.**

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=4
   9152
30 FOR I=0TO169:READB:CK=CK+B:POKE SA+I,B:NEXT
40 IFCK<>20651 THENPRINT"DATA ERROR!":END
50 POKESA+11,24:POKESA+111,38:POKESA+140,234
60 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
70 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128
   THEN 100
80 POKESA+13,124:POKESA+15,165:POKESA+25,124:PO
   KESA+26,165
90 POKESA+39,20:POKESA+41,21:POKESA+123,205:POK
   ESA+124,189
100 POKESA+4,INT(SA/256):SYS SA:NEW
110 DATA 120,162,24,160,13,173,4,3,201,24,208,4
    ,162,13,160,67,142,4,3,140
120 DATA 5,3,88,96,32,13,67,152,72,169,0,141,0,
    255,133,176,133,180,166,22
130 DATA 164,23,134,167,132,168,170,189,0,2,240
    ,58,201,48,144,7,201,58,176
140 DATA 3,232,208,240,189,0,2,240,42,201,32,20
    8,4,164,180,240,31,201,34
150 DATA 208,6,165,180,73,1,133,180,230,176,164
    ,176,165,167,24,125,0,2,133
160 DATA 167,165,168,105,0,133,168,136,208,239,
    232,208,209,169,42,32,210
170 DATA 255,165,167,69,168,170,169,0,32,50,142
    ,169,32,32,210,255,32,210
180 DATA 255,169,13,32,210,255,104,168,96,104,1
    70,24,32,240,255,104,168
190 DATA 96,56,32,240,255,138,72,152,72,24,162,
    0,160,0,32,240,255,169
200 DATA 42,208,198
```

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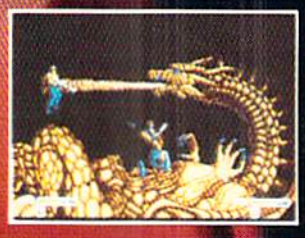

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